



राजपत्र, हिमाचल प्रदेश (असाधारण)

हिमाचल प्रदेश शासन द्वारा प्रकाशित

शिमला, बोरवार, 26 नवम्बर, 1959/5 अग्रहायण, 1881

HIMACHAL PRADESH ADMINISTRATION

INDUSTRIES DEPARTMENT

NOTIFICATION

Simla-4, the 26th November, 1959/5th Agrahayana, 1881

No. I & S. 15 (Metric) 473/58.—In exercise of the powers vested in him under sub-section (1) of section 42 of the Rajasthan Weights and Measures (Enforcement) Act, 1958 as modified and applied to the Union Territory of Himachal Pradesh *vide* Government of India, Ministry of Home Affairs Notification No. 8/4/58-J-II (i), dated the 30th September, 1958, the Lieutenant Governor, Himachal Pradesh, is pleased to make the following Rules, the same having been previously published as required by law, *vide* Himachal Pradesh Administration (Industries Department) Notification of even number dated the 6th June, 1959, published in Himachal Pradesh *Rajpatra*, dated the 15th September, 1959.

By order,
C. L. KAPILA,
Secretary.

HIMACHAL PRADESH WEIGHTS AND MEASURES (ENFORCEMENT) RULES, 1958

1. Short title.—These rules may be called the Himachal Pradesh Weights and Measures (Enforcement) Rules, 1958.

2. Definitions.—In these rules, unless the context otherwise requires,—

- (a) 'Act' means the Rajasthan Weights and Measures (Enforcement) Act, 1958; as modified and applied to the Union Territory of Himachal Pradesh;
- (b) 'Schedule' means a Schedule appended to these rules;
- (c) 'secondary standards' means the set of standard weights and measures referred to in section 4 of the Act;
- (d) 'working standards' means the set of standard weights and measures referred to in section 3 of the Act;
- (e) all words and expressions used but not defined in these rules and defined in the Act shall have the meanings respectively assigned to them in the Act.

3. Reference Standards.—The reference standards shall be kept in the custody of the Superintendent.

4. Secondary Standards.—(1) The secondary standards shall conform as regards denominations, material used in construction and design, to the specifications laid down in Schedule I.

(2) The secondary standards shall be kept at such places, in such manner and in such custody as the Superintendent may direct.

(3) A secondary standard shall be verified with the reference standard at least once in every period of five years, adjusted, if necessary, and marked with the date of verification, by the Superintendent.

(4) Subject to any rules that may be made under the Standards of Weights and Measures Act, 1956.

5. Working Standards.—(1) The working standards shall conform as regards denominations, material used in construction and design, to the specifications laid down in Schedule II.

(2) The working standards shall be prepared at such place and authenticated by such person or authority as may be specified by the State Government.

(3) The working standards shall be kept in the custody of the Inspectors.

(4) A working standard shall be verified with the secondary standard at least once in every twelve months, adjusted, if necessary, and stamped with the date of verification by the Superintendent or such other person as may be authorised by him in this behalf:

Provided that in the case of bullion and precious stones a working standard shall be so verified with the reference standard.

(5) Subject to any rules that may be made under the Standards of Weights and Measures Act, 1956.

6. Precision Balances.—(1) The Superintendent shall maintain a set of precision balances at the place where the reference standards are kept.

(2) The number, types and specifications of precision balances shall be as laid down in Schedule III.

(3) The Superintendent shall verify precision balances at least once in

every twelve months, adjust them, if necessary, to make them correct within the limits of sensitiveness, certify and stamp them, if practicable, with the date of verification.

7. Secondary Standard Balances.—(1) A set of secondary standard balances shall be maintained at every place where the secondary standards are kept.

(2) The number, types and specifications of such balances shall be as laid down in Schedule III.

(3) The Superintendent shall cause to be verified such balances at least once in every twelve months and shall cause them to be adjusted, if necessary, to make them correct within the limits of sensitiveness and to be stamped with the date of verification.

8. Working Standard Balances.—(1) The Superintendent shall supply to every Inspector a set of working standard balances with each set of working standards.

(2) The types and specifications of such balances shall be as laid down in Schedule IV.

(3) The Superintendent shall cause to be verified such balances at least once in every twelve months and shall cause the same to be adjusted, if necessary, to make them correct within the limits of sensitiveness and to be stamped with the date of verification.

9. Commercial Weights and Measures.—Commercial weights and measures of length and capacity shall conform as regards denominations, material used in construction and design to the specifications laid down in Schedule V.

10. Weighing and Measuring Instruments.—(1) All weighing and measuring instruments used, or intended to be used, in transactions for trade or commerce shall conform as regards capacities, material and design, to the specifications laid down in Schedule VI.

(2) The limits of error which may be tolerated in such weighing and measuring instruments during verification and inspection shall be as specified in Schedule VI.

(3) Notwithstanding anything contained in sub-rules (1) and (2), where any weighing or measuring instrument in use at the commencement of these rules is converted to the metric system and its capacity after conversion cannot be made to conform to any of the specifications laid down in Schedule VI, such instrument may continue to be used but the limits of error which may be tolerated in such instrument during verification and inspection shall be as for the same type of instrument of the next higher capacity specified in the said Schedule.

11. Commercial Weights etc. to be verified periodically.—(1) All weights, measures, weighing and measuring instruments used or intended to be used in transactions for trade or commerce in bullion or precious stones or by a Railway Administration within the meaning of the Indian Railways Act, 1890 or by a factory within the meaning of the Factories Act, 1948 shall be verified and stamped in accordance with the Act and these Rules at least once in every period of one year.

(2) All weights, measures, weighing and measuring instruments intended to be used in all transactions for trade and commerce other than those specified in sub-rule (1) shall be verified and stamped in accordance with the Act and these rules at least once in every period of two years.

12. Inspection and verification of weights etc.—(1) An Inspector shall visit every factory and other place in the area under his charge where weights, measures, and weighing and measuring instruments are used.

or kept for use, in transactions for trade or commerce, for verifying the same at least once during the period specified in rule 11, and may also, from time to time, make such surprise visits as he may deem necessary.

(2) All weights, measures, and weighing and measuring instruments shall be tested in a clean condition, and if necessary, the Inspector shall require the owner or user to clean them.

(3) Where a weight or measure or weighing or measuring instrument is brought to any Inspector for re-verification, the Inspector shall deal with it in the same manner as upon verification but it shall not be necessary for him to test a glass or earthenware measure, unless the original stamp has been defaced.

(4) The denomination or capacity of a weight, measure, weighing or measuring instrument, if not marked in full, shall be indicated by one of the abbreviations specified in Schedule VII.

13. Stamping of weights etc.—(1) Before stamping any weight, measure, or weighing or measuring instrument, the Inspector shall satisfy himself that such weight, measure, weighing or measuring instrument complies with the requirements of the Act and these rules.

(2) Any weight, measure, weighing or measuring instrument presented for verification shall be complete in itself, and shall not bear a manufacturer's or dealer's mark which might be mistaken for the Inspector's stamp.

(3) The Inspector shall stamp every weight, measure and weighing and measuring instrument with a stamp of uniform design issued by the Superintendent, indicating the area or district in which it has been stamped and the Inspector by whom it is stamped or both:

Provided that,—

(a) no weight, measure, weighing or measuring instrument shall be stamped, which is not, in the opinion of the Inspector, sufficiently strong to withstand the wear and tear of ordinary use in trade; and

(b) no weighing or measuring instrument manufactured after the coming into force of these rules other than Class A beam scales shall be stamped unless provided by the manufacturer with a plug or stud of soft metal on which to place the Inspector's stamp, such plug or stud being made irremovable by under-cutting or in some other suitable manner.

(4) The Inspector shall also mark the date of stamping on all weights, measures (other than glass, earthenware and enamelled metal measures) and weighing and measuring instruments, except when the size of such weight, measure or instrument makes it impracticable.

(5) On completion of verification and stamping, the Inspector shall issue a certificate of verification in the form specified in Schedule VIII, to the trader.

14. Transitional Provisions.—Weights, measures and weighing and measuring instruments, which do not conform to the requirements of these rules, shall be used for the purpose of trade and commerce, so long as the use of such weights and measures and weighing and measuring instruments is permitted under the Standards of Weights and Measures Act, 1956 (Central Act No. 89 of 1956).

15. Procedure for carrying out inspection etc.—In carrying out his duties of inspection, verification and stamping of weights, measures and weighing and measuring instruments, *in situ* the Inspector shall observe the procedure laid down in Schedule IX in addition to that laid down in Schedules V and VI.

16. Monthly Report of Inspector.—Every Inspector shall submit a monthly

report to the Superintendent, showing the work done by him, in a form approved by the Superintendent.

17. Obliteration of Stamps.—The Inspector, on inspection, shall obliterate the stamp on—

- (a) any weight, measure, or weighing or measuring instrument which cannot be made to conform to the requirements of these rules;
- (b) any weight or measure, if it does not admit of proper adjustment owing to its being broken, indented or otherwise defective;
- (c) any weight or measure or weighing or measuring instrument which, since the last stamping, has been repaired or re-adjusted so as to cease to conform to the requirements of these rules;
- (d) any weight or measure or weighing or measuring instrument due and not submitted for re-verification and stamping;
- (e) any weight or measure of length or capacity or a weighing or measuring instrument, if the error exceeds the limits allowed at the time of inspection:

Provided that where the error referred to in clause (e) is not, in the Inspector's judgement, such as to require the immediate obliteration of the stamp, he shall serve a notice on the trader, informing him of the defects found in the weight, measure or weighing or measuring instrument, and calling upon him to remove the defects within a stated period not exceeding eight days and shall—

- (i) if the trader fails to have them corrected within that period, obliterate the stamp; or
- (ii) if the weight, measure or weighing or measuring instrument is adjusted to remove the defects within the stated period, re-verify the weight, measure or weighing or measuring instrument and stamp the same, if found correct;

Provided further that where the defect in a weighing instrument may be corrected by re-balancing, the stamp shall not be obliterated.

18. Fees for verification, adjustment and stamping.—(1) Fees payable for verification and stamping of weights, measures, and weighing and measuring instruments at the office of the Inspector shall be as specified in Schedule X.

(2) If verification is done at any premises other than the office of the Inspector, an additional fee shall be charged at half the rates specified in Schedule X and the owner or user, as the case may be, of the weight, measure or weighing or measuring instrument, shall also pay the expenses incurred by the Inspector for visiting the premises, including the cost of transporting and handling the working standards, balances and other equipment;

Provided that no additional fee shall be charged for verification and stamping *in situ* of—

- (a) petrol or fuel vehicles, weigh-bridges, Dormant platform machines, and such other instruments as may be specified in this behalf by the Superintendent, and
- (b) weights, measures and weighing and measuring instruments in the premises of a manufacturer, or stockist, of such weights, measures and instruments.

(3) An Inspector may carry out minor adjustments on payment of such additional fees as may be fixed by the Superintendent in each case.

19. No fees to be charged for re-stamping within a certain period.—Notwithstanding anything in rule 18, no fee shall be payable for re-stamping any weight, measure or weighing or measuring instrument, within the period specified in rule 11 from the date on which it was last stamped, provided the original stamp was not obliterated under rule 17.

20. Fees for re-verification under rule 17 after adjustment.—A weight, measure, or weighing or measuring instrument which on verification as provided in rule 11, is found to be incorrect shall be returned to the person concerned for adjustment, when the necessary adjustment has been carried out, such weight, measure or weighing or measuring instrument shall be re-verified on payment of 25% of the prescribed fees and if found correct shall be stamped.

21. Collection of fees and deposit into the Treasury.—Before commencing the work of verification or re-verification, the Inspector shall inform the person concerned of the fees payable by him under these rules and shall receive the same and issue a receipt in the form approved by the Superintendent two copies of such receipt being kept on record.

(2) The Inspector shall maintain a register which shall be written up from day to day and shall show the amount of fees and carriage charges collected during the day, in the forms approved by the Superintendent.

(3) All payments received by the Inspector during the preceding week shall be paid into the Government Treasury every monday for credit to "XXXII—Industries and Supplies", a receipt obtained and intimation to that effect sent to the Superintendent.

22. Seizure, detention and disposal of unauthorised weights, measures and instruments.—(1) (i) Weights and measures, beam scales, spring balances, counter machines and steel yards shall be liable to be seized and detained if:—

- (a) they are not of the denominations specified in Schedules V and VI;
- (b) they are false or defective;
- (c) fraud is committed in using them;
- (d) they are un-stamped;
- (e) the stamp on them is forged or transferred.

(ii) Weighing and measuring instruments other than those specified in clause (i) shall be liable to seizure and detention in cases (b), (c) and (e) of that clause.

(2) Any weight or measure or weighing or measuring instrument seized and detained under this rule, which is not to be the subject of proceedings in a court, shall, after the expiry of one month after its seizure, be so dealt with as the Superintendent may by general or special order direct, and the materials thereof shall be sold and the proceeds credited to the Government.

(3) Any weight or measure or weighing or measuring instrument seized and detained under this rule, which is to be the subject of proceedings in a court, shall be produced by the Inspector before the court and shall, after conclusion of the proceedings, be taken possession of by the Inspector and dealt with in accordance with the instructions issued by the Superintendent in this behalf.

23. Qualifications of Inspectors.—(1) No person shall be appointed as Inspector unless he—

- (i) is able to speak, read and write one of the regional languages of the State; and
- (ii) on selection, has satisfactorily completed at least six weeks' training in a Department of Government responsible for the Enforcement of Weights and Measures.

(2) Nothing in sub-rule (1) shall apply to persons who have been working as Inspectors for a period of not less than a year immediately before the commencement of these rules.

24. Duties of Inspectors.—The duties of an Inspector are—

- (a) verification and stamping of weights and measures etc.;
- (b) inspections;
- (c) collection of fees and other charges, and submission of the reports and returns prescribed in the rules or required by the Superintendent.
- (d) safe custody of articles seized and detained in the course of his duty;
- (e) safe and proper custody of the secondary and working standards and other equipment entrusted to his charge;
- (f) maintenance of such books as may be specified by the Superintendent.

25. Inspector to be provided with Working Standards, Beam Scales and Balances, etc.—Every Inspector shall be provided by the Superintendent with,

- (1) Working standards, beam scales and balances for testing weights, adequate instrumental equipment, travelling kit for inspection of such material and form as may from time to time be necessary.
- (2) Such dies, punches, stencil plates, branding irons, etching and engraving and other implements as may be necessary for affixing verification stamp, the design and number of which shall be furnished by him.
- (3) Punches of suitable sizes, eight pointed star design for the purpose of obliterating the stamps.

26. Exemption from observing requirements of rules.—Where in the special circumstances in any case, it appears to an Inspector to be impracticable to comply literally with any requirements of these rules, he shall consult the Superintendent and the Superintendent may, on such reference, if he thinks fit dispense with the observance of such requirement.

27. Licensing of manufacturers, repairers and dealers of weights, measures, etc.—(1) Every manufacturer or repairer of, or dealer in, weights, measures or weighing and measuring instruments shall obtain a licence from the Superintendent in the form set out in Schedule XI; such licence may be renewed from year to year.

(2) The fees payable for such licence and its renewal shall be as specified in Schedule XII.

(3) The Superintendent may, by order, refuse to grant or renew the licence or suspend or cancel the licence of a manufacturer or repairer of, or dealer in, weights, measures, weighing and measuring instruments on the ground of want of proper and adequate workshop facilities or staff or incompetency or failure to observe any provisions of the Act or these rules:

Provided that no such order shall be made without giving the aggrieved person an opportunity of stating his case.

(4) The Superintendent shall maintain a register of licensed manufacturers, repairers and dealers in the form set out in Schedule XIII.

28. Records to be maintained by manufacturer etc.—Every manufacturer or repairer of, or dealer in, weights, measures or weighing and measuring instruments shall maintain such records in such form and submit such returns as the Superintendent may direct.

29. **Certificate of verification to be exhibited.**—The person to whom a certificate of verification is issued shall exhibit the same in a conspicuous place in the premises where the weights, measures or weighing or measuring instruments to which the certificate relates are used and in case of hawkers such certificate shall be kept on his person.

30. **Penalty.**—Any person who contravenes any provision of these rules shall on conviction be punished with fine which may extend to five hundred rupees.

SCHEDULE I

Denominations, Material, Shape, Permissible Errors of Secondary Standards of Weights and Measures

(See Rule 4)

1. SECONDARY STANDARD WEIGHTS

Denominations—

<i>Kilogram Series</i>	<i>Gram Series</i>	<i>Milligram Series</i>
10	500	500
5	200	200
	200	200
	100	100
2	50	50
2	20	20
	20	20
	10	10
1	5	5
	2	2
	2	2
	1	1

Material. (a) Weights of 10 kg to 1 g shall be cast from admiralty bronze of the following composition:

<i>Constituent</i>	<i>Per cent</i>
Tin	9.50 to 10.50
Zinc	1.50 to 2.50
Lead (Max.)	0.50
Nickel (Max.)	1.00
Other elements total (Max.)	0.15
Copper	Remainder

(b) Weights of 500 mg to 50 mg shall be made of cupro-nickel having a nominal composition of 75 per cent copper and 25 per cent nickel.

(c) Weights of 20 mg to 1 mg shall be made of commercially pure aluminium sheets.

Shape.—(a) For kilogram and gram series—Integral cylindrical body with knobs flattened at the top.

(b) For milligram series, the weights shall be in the form of square sheets, one of the corners being bent at right angles.

Permissible errors.—The permissible errors in excess and in deficiency shall be as follows:

Denomination	Permissible Error	
	in excess mg	in deficiency mg
10 kg	50	25
5 kg	25	12.5
2 kg	15	7.5
1 g	10	5
500 g	5	2.5
200 g	4	2
100 g	3	1.5
50 g	2	1
20 g	1.5	0.75
10 g	1	0.5
5 g	0.8	0.4
2 g	0.6	0.3
1 g	0.4	0.2
500 mg	0.4	0.2
200 mg	0.2	0.1
100 mg	0.2	0.1
50 mg	0.1	0.05
20 mg	0.1	0.05
10 mg	0.05	0.02
5 mg	0.05	0.02
2 mg	0.05	0.02
1 mg	0.02	0.02

2. SECONDARY STANDARD CAPACITY MEASURES

Denominations—

Litre Series (l)	Millilitre Series (ml)
5	500
2	200
1	100
	50
	20
	10

Material.—Secondary measures of capacity shall be cast out of admiralty bronze of the same composition as is employed in the case of secondary standard weights.

Shape.—(a) The 5 litre measure shall be cylindrical and have its inside diameter equal to the height of the measure. This shall have two handles attached securely to its sides.

(b) Measures of 2 litres and below shall be of the same shape as above but shall not have any handles.

(c) The denominations of the measures shall be engraved on the outside surface.

(d) Each set of measures shall be supplied with specially selected striking gkisses.

Permissible Errors.—The permissible errors in excess and deficiency shall be as follows:

Denomination	Permissible Error	
	in excess g	in deficiency g
5 l	2	2
2 l	1	1
1 l	0.8	0.8
500 ml	0.5	0.5
200 ml	0.4	0.4
100 ml	0.3	0.3
50 ml	0.2	0.2
20 ml	0.1	0.1
10 ml	0.1	0.1

SCHEDULE II

(See Rule 5)

Denominations, Material, Shape, Permissible Errors for Working Standards of Weights and Measures

I. WORKING STANDARD WEIGHTS—(For Cast Iron and Non-bullion Weights)

Denominations—

Kilogram Series	Gram Series	Milligram Series
20	500	500
10	200	200
	200	200
	100	100
5	50	50
2	20	20
2	20	20
1	10	10
	5	5
	2	2
	2	2
	1	1

Material.—(a) Weights of 20 kg to 1 g shall be cast from admiralty bronze or cupro-nickel of the following composition:

Admiralty Bronze:

<i>Constituent</i>						<i>Per cent</i>
Tin	..	..	..	..	..	9.50 to 10.50
Zinc	..	..	..	..	..	1.50 to 2.50
Lead (Maximum)	..	..	..	..	..	0.50
Nickel (Maximum)	..	..	..	..	..	1.00
Other elements	..	..	..	..	..	0.15
total, maximum						
Copper	..	..	..	..	..	Remainder

Cupro-Nickel:

Copper	..	..	..	..	..	75
Nickel	..	..	..	..	..	25

(b) Weights of 500 mg to 100 mg shall be made of admiralty bronze (rolled) sheets. [Composition as in (a) above].

(c) Weights of 50 mg to 1 mg shall be made out of commercially pure aluminium sheets.

Shape.—(a) Weights of 20 kg and 10 kg shall be cylindrical in shape and shall be cast in two halves, the top half being screwed snugly into the bottom half. The top half shall be cast in the form of a handle for lifting purposes. The two halves after assembly shall be locked by means of a Setscrew over which the seal of the verifying authority shall be stamped.

(b) Weights of 5 kg to 200 g (inclusive) shall be cast in two halves, the top half being screwed snugly into the bottom half. The top half shall be cast in the form of a knob for lifting purposes. The two halves, after assembly shall be locked by means of a Setscrew, over which the seal of the verifying authority shall be stamped.

(c) Weights of 100 g to 10 g shall be as (b) above except that there shall be no locking arrangement.

(d) Weights of 5 g to 1 g shall be integral solid weights.

(e) Weights of 500 mg to 1 mg (inclusive) shall be of square shape with one of the sides bent at right angles to the flat surface for ease of handling.

Permissible Errors.—The permissible errors in excess and in deficiency shall be as follows:

Denomination	Permissible Errors	
	in excess mg	in deficiency mg
20 kg	200	100
10 kg	100	50
5 kg	50	25
2 kg	30	15
1 kg	20	10
500 g	10	5
200 g	8	4
100 g	6	3
50 g	4	2

Denomination	Permissible Errors	
	in excess mg	in deficiency mg
20 g	3	1.5
10 g	2	1
5 g	1.6	0.8
2 g	1.2	0.6
1 g	0.8	0.4
500 mg	0.8	0.4
200 mg	0.4	0.2
100 mg	0.4	0.2
50 mg	0.2	0.1
20 mg	0.2	0.1
10 mg	0.1	0.05
5 mg	0.1	0.05
2 mg	0.1	0.05
1 mg	0.05	0.05

2. WORKING STANDARD CAPACITY MEASURES

Denomination.—

Litre Series (1)	Millilitre Series (ml)
20	500
10	200
5	100
2	50
1	20
	10

Materials of Construction.—Working Capacity Standards shall be pressed out of oxygen free, deoxidised annealed copper sheets of deep drawing quality.

Shape.—(i) Working standard capacity measures of 10 litres shall be cylindrical with the handles securely fixed to the sides.

(ii) All other working standard capacity measures shall also be cylindrical, but shall not be provided with handles. The diameter of each measure shall approximately be equal to the height of the measure. The measures shall be suitably reinforced.

(iii) The denominations of the working standard measures shall be engraved on the outside surface.

(iv) The outside of the body of the working standard measure shall be oxidised to give a smooth dull black surface and the inside shall be tinned.

(v) Each set of working standard capacity measures shall be supplied with specially selected striking glasses and the measures and glasses shall be securely

packed in velvet lined teakwood boxes.

Permissible Errors—

Denomination	Permissible Errors	
	in excess (in ml)	in deficiency (in ml)
10 l	8	8
5 l	4	4
2 l	2	2
1 l	1.5	1.5
500 ml	1.0	1.0
200 ml	0.8	0.8
100 ml	0.6	0.6
50 ml	0.4	0.4
20 ml	0.2	0.2
10 ml	0.2	0.2

SCHEDULE III

(See Rules 6 and 7)

Specifications for Precision and Secondary Standard Balances

Range of Balances—

Capacities	Sensitiveness mg/division of scale
20 kg	5
5 kg	1
1 kg	0.5
200 g	0.05 or 0.1
20 g	0.01
2 g	0.005

Note.—1. Precision and Secondary Standard Balances shall be used only for indoor work in laboratories and shall be handled carefully by competent trained personnel. The balances shall be designed according to well established practices of Precision Balance manufacturers.

2. Both Precision and Secondary Standard Balances shall be manufactured to the specifications given above.

SCHEDULE IV

(See Rule 8)

Specifications for Working Standard Balances

1. Range of Balances—

Capacity	Sensitiveness mg/division of scale	Approximate Beam Length
50 kg	100	750 mm
5 kg	10	250 — 300 mm
200 g	1.0	150 — 200 mm
2 g	0.02	120 — 150 mm

2. **Types.**—Working Standard Balances shall be of both indoor and outdoor types.

3. **Design and Construction.**—The balances shall be constructed of non-magnetic materials and shall be robust in construction. They shall be capable of being easily assembled. Outdoor type balances shall be fitted in suitable carrying cases to enable the balances to withstand rough transport conditions. Smaller balances *i.e.* capacity 5 kg and below shall be provided with glass cases. Portable balances of capacity 5 kg and below shall be fitted into one carrying case for ease of transportation.

SCHEDULE V

(See Rule 9)

Specifications for Commercial Weights and Measures of Length and Capacity

PART I

COMMERCIAL WEIGHTS (OTHER THAN CARAT WEIGHTS)

1. **Denominations.**—The denominations of the different types of weights shall be as follows:—

(a) Iron and Steel Weights:

50 kg	500 g
20 kg	200 g
10 kg	100 g
5 kg	
2 kg	
1 kg	

(b) Brass and Bronze Weights:

Bullion		Other than Bullion	
20 kg	500 g	1 kg	500 g
10 kg	200 g		200 g
5 kg	100 g		100 g
2 kg	50 g		50 g
1 kg	20 g		20 g
	10 g		10 g
	5 g		5 g
	2 g		2 g
	1 g		1 g

(c) Sheet Metal Weights (Bullion and other than Bullion):

500 mg
200 mg
100 mg
50 mg
20 mg
10
5
2
1

The actual series to be used in practice shall consist of two weights of denominations 2, 20 or 200.

2. Iron and Steel weights—(a) Materials.—Weights of 50 kg and down to and including 5 kg shall be made only of cast iron. Cast iron weights may preferably be made from material conforming to grade 10 B of IS: 210-1950. Weights of 2 kg and down to and including 100 g shall either be made of cast iron or forged mild steel as specified by the purchaser. Mild steel weights may preferably be made from material conforming to steel designation B of IS: 226-1955.

(b) Shapes and Dimensions.—The shapes and dimensions of cast iron weights shall conform to Fig. 1 and 2 read with Tables 1 and 2 and those of mild steel shall conform to Fig. 2 read with Table 2.

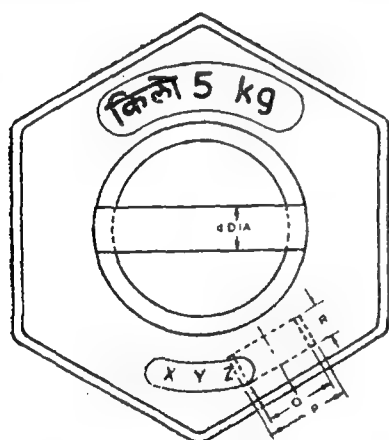


FIG. 1.—CAST IRON WEIGHT WITH CAST-IN HANDLE.

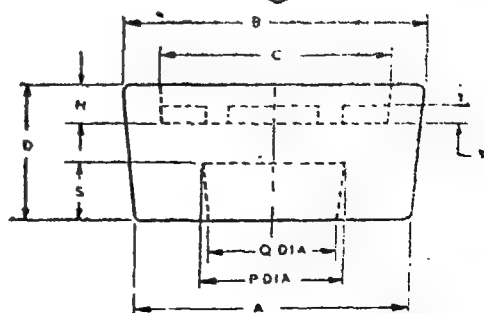
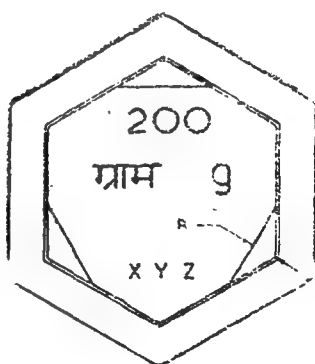


FIG. 2.—CAST IRON OR FORGED MILD STEEL WEIGHT.

TABLE 1.—DIMENSIONS OF CAST IRON WEIGHTS WITH HANDLE

Denomi- nation	A	B	C	D	E	G	P	Q	R	S	T
50 kg	236	253	134	170	100	27	58	48	24	102	32
20 kg	188	200	112	113	90	21	44	38	19	66	22
10 kg	152	161	92	88	74	18	36	30	15	54	19
5 kg	125	132	75	65	62	15	29	25	12	40	16

All dimensions in millimetres.

Tolerance on dimensions ± 5 per cent.

TABLE 2.—DIMENSIONS OF CAST IRON OR FORGED MILD STEEL WEIGHTS

Denomination		A	B	C	D	H	P	Q	R	S	T
2 kg	..	94	101	76	40	10	34	30	9	18	4
1 kg	..	73	79	60	34	8	32	28	8	16	4
500 g	..	57	62	46	27	6	23	20	6	13	3
200 g	..	43	47	36	21	6	22	20	4	9	3
100* g	..	34	36	28	16	4	18	16	3	7	2.5

All dimensions in millimetres.

Tolerance on dimensions:

(a) for weights above 1 kg ± 5 per cent.(b) for weights 1 kg and below ± 10 per cent.

(c) **Cast-in-Handles.**—Weights of denominations of 50 kg and down to and including 5 kg shall be provided with cast-in-handles made of mild steel which may conform to steel designation B of IS: 226-1955.

(d) **Nesting of weights.**—Weights of denominations of 2 kg and down to and including 100 g shall nest with each other.

(e) **Loading Holes.**—Weights with cast-in-handles (see Fig. 1) shall have one rectangular loading hole on the under surface, tapering outside along the width while the nesting weights (see Fig. 2) shall have one round loading hole, tapering outwards in the centre of the underside.

(f) **Permissible Errors—**

Denomination	Verification		Inspection	
	Errors in excess only		Excess	Deficiency
		mg	mg	
50 kg	..	20,000		10,000
20 kg	..	10,000		5,000
10 kg	..	5,000	Error same as in verification	2,500
5 kg	..	3,000		1,500
2 kg	..	1,600		800
1 kg	..	1,000		500
500 g	..	600		300
200 g	..	400		200
100 g	..	320		160

Note.—New weights, when presented for checking and stamping, shall not weigh less than the denomination value plus 50 per cent of the excess tolerance shown above.

3. Brass and Bronze weights.—(a) Materials.—The weights shall be made of cast brass or cast bronze, or processed from brass rods. The cast brass and brass rods may preferably conform to Grade 3 of IS: 292-1951 and to IS: 319-1951, respectively. Cast bronze may preferably conform to Grade 2 of IS: 306-1951.

(b) Shapes and Dimensions.—Brass and bronze weights shall be of the following types:—

(I) Bullion weights.—(i) Weights of denominations of 20 kg and down to and including 1 g, shall be cylindrical in shape, with a handle for 20 kg and 10 kg weights, and a knob for the rest of the denominations. Shapes and dimensions shall conform to Fig. 3 and 4 read with Tables 3 and 4, respectively. Weights of 20 kg down to and including 20 g, shall be marked with the words 'Bullion' and 'बुलियन' with a 'diamond' as shown in Fig. 3 and 4, and weights of 10 g and below shall be marked with only a 'diamond'.

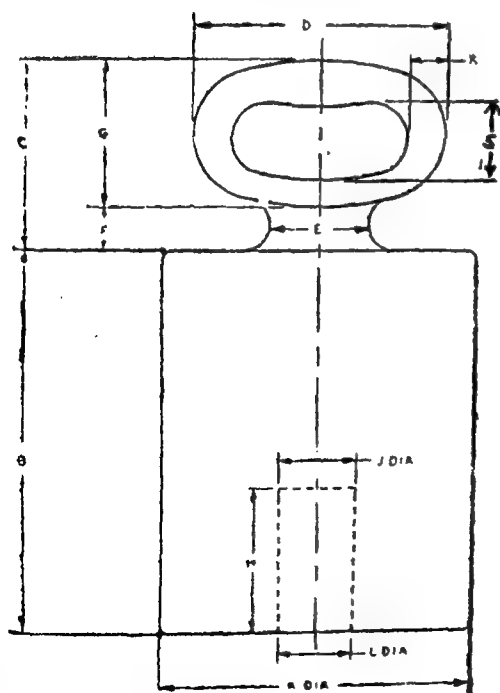
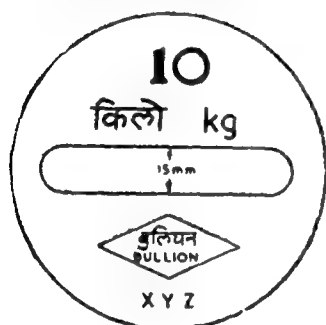


FIG. 3.—CYLINDRICAL BULLION WEIGHT WITH HANDLE.

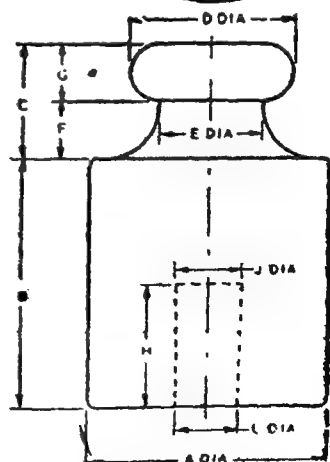
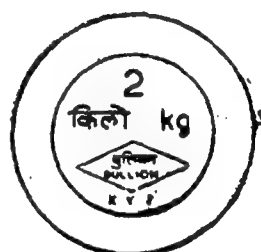


FIG. 4.—CYLINDRICAL BULLION WEIGHT WITH KNOB.

TABLE 3.—DIMENSIONS OF CYLINDRICAL BULLION WEIGHTS WITH HANDLE

Denomination		A	B	C	D	E	F	G	H	L	J	K	S
20 kg	..	133	157	71	106	41	16	55	51	25	26	14	25
10 kg	..	106	130	64	85	33	14	50	49	25	26	13	25

All dimensions in millimetres.

Tolerance on dimensions ± 5 per cent.

TABLE 4.—DIMENSIONS OF CYLINDRICAL BULLION WEIGHTS WITH KNOB

Denomination		A	B	C	D	E	F	G	H	L	J
5 kg	..	86	88	41	56	37.5	22.5	18.5	38	19	20
2 kg	..	64	67	27	39	24	14	13	27	17	17.5
1 kg	..	50	50	23.5	33	21	12	11.5	25	16	17
500 g	..	41	29	20	25	17	10.5	8.5	19	16	17
200 g	..	32	29	16	20	12	9	7	13.5	13	13.5
100 g	..	24	24	12	17	9.5	6	6	11	11	12
50 g	..	19	19	10	14	8	5	5	9	9.5	10
20 g	..	14	14	6	10	6	3	3	6	6	7
10 g	..	11	11	5	8	5	3	2	—	—	—
5 g	..	9	9	4	6	4	2	2	—	—	—
2 g	..	6	6	3	4	2	1.5	1.5	—	—	—
1 g	..	6	6	2	3	1	1	1	—	—	—

All dimensions in millimetres.

Tolerance on dimensions:

(a) for weights above 1 kg ± 5 per cent.(b) for weights 1 kg and below ± 10 per cent.

- (ii) Weights of denominations 1 kg and down to and including 1 g shall be flat cylindrical in shape (without a knob) and shall nest with each other. Shapes and dimensions shall conform to Fig. 5 read with Table 5. Weights of 1 kg and down to and including 20 g shall be marked with the words 'Bullion' and 'बुलियन' within a 'diamond' as shown in Fig. 5 and weights of 10 g and below down to and including 1 g shall be marked with only a diamond.

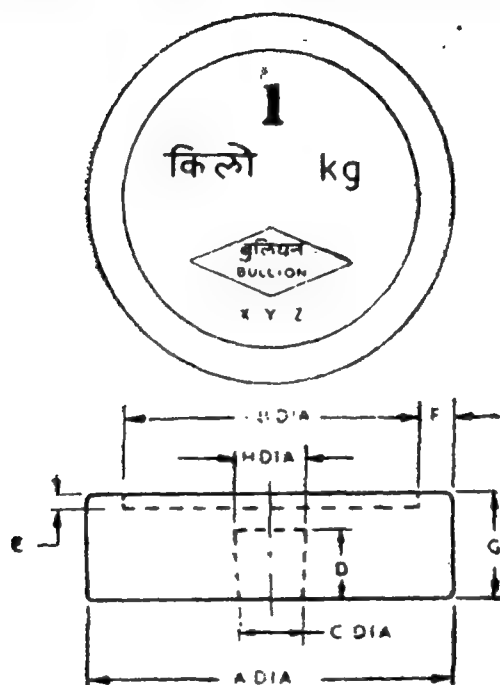


FIG. 5.—FLAT CYLINDRICAL BULLION WEIGHT

TABLE 5.—DIMENSIONS OF FLAT CYLINDRICAL BULLION WEIGHTS

Denominations			A	B	C	D	E	F	G	H
1 kg	..	..	82.5	66.5	16	16	3	8.0	24	17
500 g	..	..	65	49.5	16	13	2.5	7.75	19	17
200 g	..	..	48.0	38.5	13	9.5	2.5	4.75	14	14
100 g	..	..	37.5	29.5	11	7	2	4	11.5	12
50 g	..	..	28.5	22.5	9.5	6	1.5	3	10.5	10
20 g	..	..	21.5	17.5	8	4	1.5	2.0	7	8
10 g	..	..	16.5	13.5	—	—	1	1.5	6	—
5 g	..	..	12.5	10.5	—	—	1	1	5	—
2 g	..	..	10	8	—	—	0.5	1	4	—
1 g	..	..	7.5	—	—	—	—	—	2.5	—

All dimensions in millimetres.

Tolerance on dimensions ± 10 per cent.

- (II) **Other than Bullion Weights.**—(For supplementing the iron and steel series) weights of denominations 1 kg and down to and including 1 g shall be flat cylindrical in shape and shall have a distinct downward taper. Shapes and dimensions shall conform to Fig. 6 read with Table 6.

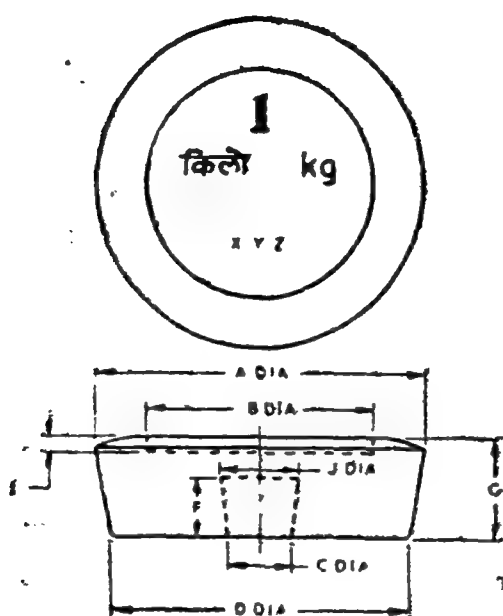


FIG. 6.—FLAT CYLINDRICAL WEIGHT

TABLE 6.—DIMENSIONS OF FLAT CYLINDRICAL WEIGHTS

Denominations	A	B	C	D	E	F	G	J
1 kg	84.5	58	16	76	4	15	25.5	20
500 g	64	46.5	16	56	3	14	23	20
200 g	50	34.5	13	45	2.5	9.5	15	15
100 g	38	26	11	33.5	2	9.5	13	13
50 g	29	20.5	10	25	2	8	11.5	12
20 g	22	16.5	8	19.5	1	4	8	10
10 g	17.5	—	—	16	1	—	6	—
5 g	13	10	—	11.0	1	—	5	—
2 g	10	7.5	—	9	0.5	—	3.5	—
1 g	8	—	—	6.5	—	—	2.5	—

All dimensions in millimetres

Tolerance on dimensions ± 10 per cent.

(c) **Loading Holes.**—Weights of denominations 20 kg and down to and including 20 g shall have a round loading hole, tapering outwards in the centre of the underside (see Fig. 3, 4, 5 and 6).

(d) Permissible Errors—

Denominations	Verification Errors in excess only		Inspection			
	Bullion Weights	Other than Bullion Wts.	Bullion Weights		Other than Bullion Weights	
			Excess	Deficiency	Excess	Deficiency
	mg	mg	mg	mg	mg	mg
20 kg	500	—		250		—
10	250	—		125		—
5	150	—	Error	75	Error	—
2	80	—	same	40	same	—
1	50	250	as in	25	as in	125
500	30	150	Verification	15	Verification	75
200	20	100		10		50
100	16	80		8		40
50	12	60		6		30
20	10	50		5		25
10	8	40		4		20
5	6	30		3		15
2	4	20		2		10
1	2	10		1		5

4. Sheet Metal Weights—(a) Materials.—Sheet Metal Weights shall be made of stainless steel, aluminium, brass or nickel silver sheets. The aluminium and brass sheets may preferably conform respectively to IS Designation NS 3 of IS: 737-1955 and Grade 4 of IS: 410-1953.

(i) Nickel Silver Sheet.—Nickel silver sheet should preferably have the following composition:

Constituent	Per cent by weight
Copper	63.0 to 66.5
Nickel	17.5 to 19.5
Zinc	Remainder.

(ii) Stainless Steel Sheet.—Stainless steel sheet should preferably conform to the following composition:

Constituent	Per cent by weight
Carbon, max. ..	0.16
Silicon, min. ..	0.20
Manganese, max. ..	2.00
Nickel	7.0 to 10.0*
Chromium	17.0 to 20.0*
Sulphur, max. ..	0.045
Phosphorus, max. ..	0.045

*Nickel plus chromium not less than 25.0 per cent.

(b) **Shapes and Dimensions.**—(I) **Other than Bullion Weights.**—After bending along one of the sides (see Fig. 7) the weights shall have the dimensions given in Table 7, and the following shapes:—

Denomination

Shape

500, 50, 5

200, 20, 2

100, 10, 1

Hexagon

Square

Triangle

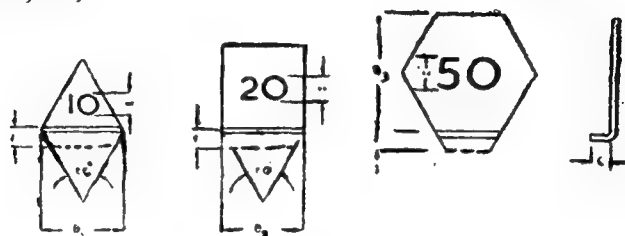


FIG. 7.—SHEET METAL WEIGHTS

TABLE 7.—DIMENSIONS OF SHEET METAL WEIGHTS

Denominations	B ₁	B ₂	B ₃	H	G
mg					
500	—	—	12	4	2
200	—	9.0	—	3.5	2
100	9.0	—	—	3.5	2
50	—	—	9.5	3	1.5
20	—	6.4	—	2.5	1.5
10	6.4	—	—	2	1.5
5	—	—	6.3	2	1
2	—	3.6	—	2	1
1	3.6	—	—	2	1

All dimensions in millimetres

Tolerance on dimensions ± 10 per cent.

(II) **Bullion Weights.**—When intended for use in the bullion trade, sheet metal weights shall, after bending, have circular shape; their diameters shall be as given in Fig. 8 read with Table 8.

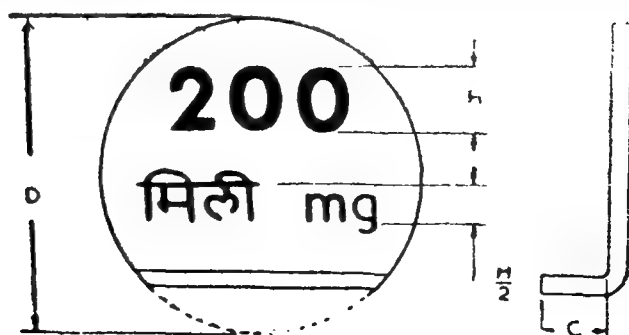


FIG. 8.—SHEET METAL BULLION WEIGHT

TABLE 8.—DIMENSIONS OF SHEET METAL WEIGHTS (BULLION)

Denomination		D	C	H
mg				
500	..	11.0	2	2
200	..	10.0	2	2
100	..	9.0	2	2
50	..	8.0	1.5	2
20	..	6.3	1.5	1.6
10	..	5.6	1.5	1.6
5	..	5.0	1.0	1
2	..	4.0	1.0	1
1	..	3.2	1.0	1

All dimensions in millimetres.

Tolerance on dimensions ± 10 per cent.

(c) Permissible Errors—

Denomina- tion	Verification Errors in excess only		Inspection			
	Bullion weights	Other than bullion weights	Bullion Weights		Other than Bullion Weights	
	mg	mg	Excess mg	Deficiency mg	Excess mg	Deficiency mg
500	1.6	8.0	Error	0.8	Error	4.0
200	1.2	6.0	same as	0.6	same as	3.0
100	0.8	4.0	in verifi- cation	0.4	in verifi- cation	2.0
50	0.4	2.0		0.2		1.0
20	0.4	2.0		0.2		1.0
10	0.2	1.0		0.1		0.5
5	0.2	0.4		0.1		0.2
2	0.2	0.2		0.1		0.1
1	0.1	0.1		0.05		0.05

5. Manufacture and finish—General.—When the weights are cast, the castings shall be reasonably smooth, and free from dross, pits, blow holes and other defects. When the weights are made by machining or forging, the surface shall be reasonably smooth. Sheet metal weights shall be clearly sheared and shall be free from burrs. Cast iron and forged weights shall be coated with a thin film of suitable black paint or varnish.

The raised markings on weights shall be clean and legible. The stamped markings on sheet metal weights shall be legible and deep enough to ensure indelibility over a long period, but not so deep as to crack the sheet.

When lead is used in adjusting weights, it shall be so fitted as to ensure that it does not dislodge itself under normal conditions of use.

The steel handles of cast iron weights shall be rigidly fixed.

6. Marking.—Every weight, except weights of 10g and lower denominations, shall have the manufacturer's name or trade mark indelibly cast or stamped on it.

The denominations shall be indicated in an indelible manner, with the abbreviations 'kg' and 'किलो' to indicate kilogram, 'g' and 'ग्राम' to indicate gram, and 'mg' and 'मिली' to indicate milligram. The size of numerals and letters (letters need not be stamped on weights 50 mg and below) indicating denominations of weights shall be at least twice the size of letters indicating the manufacturer's name or trade mark. The numerals used in the denomination shall be only Indo-Arabic figures.

7. **Adjustments.**—The weights provided with loading holes shall be adjusted by pouring the required weighed quantity of molten lead into the loading hole and pressing the lead firmly. The approximate distance of the lead from the surface shall be not less than 20 per cent of the minimum thickness of the weight when new. The lead used for adjusting may preferably conform to Grade Pb. 99.8 per cent of IS: 27-1956.

PART II

COMMERCIAL CARAT WEIGHTS

1. **General.**—(a) Commercial Carat Weights shall be used in weighing precious stones and pearls.

(b) For ease of calculation and convenience of use, a carat is usually subdivided into 100 equal parts, called cents. A cent thus equals 2 mg. In the denominations of the commercial carat weights, the system followed is that where a fractional weight in the carat series occurs, that fraction is given as so many parts per 100 cents, e.g., 0.5 carat is designated as 50/100 carat.

2. **Denominations.**—The denominations of carat weights shall be as follows: (The gram and milligram equivalents are shown against each for ready reference).

(a) **Knob Weights.**—

Denominations			Equivalents
CARAT (C)			g
500	..	..	100
200	..	..	40
100	..	..	20
50	..	..	10
20	..	..	4
10	..	..	2
5	..	..	1

(b) **Sheet Metal Weights.**—

Denominations			Equivalents
CARAT (C)			mg
2	..	..	400
1	..	..	200
50/100	..	..	100
20/100	..	..	40
10/100	..	..	20
5/100	..	..	10
2/100	..	..	4
1/100	..	..	2
0.5/100	..	..	1

The actual series to be used in practice shall consist of two weights of denominations 2, 20 or 200, and 2/100, 20/100 Carats.

3. Knob Weights—(a) Materials.—The weights shall be made from rolled, drawn or extruded material and not cast.

The weights shall be made from brass, nickel silver, nickel chromium or bronze, which may preferably conform to the following:—

(i) **Brass.**—IS: 319-1951.

(ii) **Nickel Silver.**—

<i>Constituent</i>		<i>Per cent</i>
Copper	.. ..	63.0 to 66.5
Nickel	.. ..	17.5 to 19.5.
Zinc	.. ..	Remainder
<i>Impurities.</i> —		
Iron, max.	.. ..	0.25
Manganese	.. ..	0.25
Lead, max.	.. ..	0.05

(iii) **Nickel Chromium.**—

<i>Constituent</i>		<i>Per cent</i>
Carbon, max.	.. ..	0.10
Manganese, max.	.. ..	0.50
Chromium	.. ..	19.0—21.0
Silicon, max.	.. ..	0.80
Copper, max.	.. ..	0.20
Iron, max.	.. ..	1.20
Nickel (small amounts of cobalt to be counted as nickel)	.. ..	Remainder

(iv) **Bronze.**—

<i>Constituent</i>		<i>per cent</i>
Copper	.. ..	89.0—91.0
Tin	.. ..	Remainder.
<i>Impurities.</i> —		
Lead, max.	.. ..	0.05
Iron, max.	.. ..	0.05
Others, (total) max.	.. ..	0.13

(b) **Shape and dimensions.**—The shape and dimensions of the weights shall be as shown in Fig. 9 and Table 9.

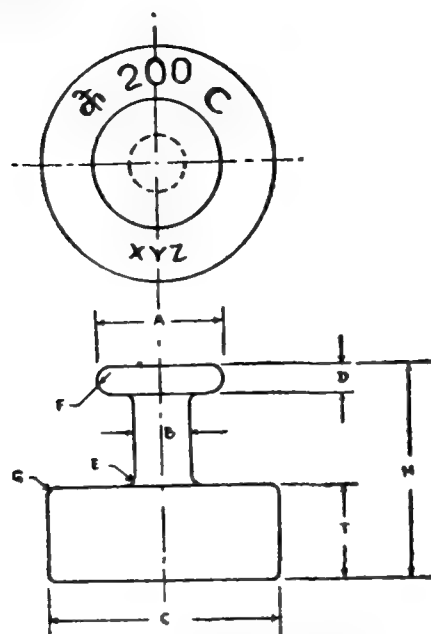


Fig 9 Carat Weight (knob)

TABLE 9.—NOMINAL DIMENSIONS OF KNOB CARAT WEIGHTS

(All Dimensions in mm.)

Denominations (Carat)		A	B	C	D	E*	F*	G*	H	T
5	..	5	2.0	6.3	1.5	1.0	0.75	0.20	7.99	2.49
10	..	6	2.5	8.2	1.6	1.0	0.80	0.20	9.36	3.26
20	..	7	3.0	10.5	1.7	1.0	0.85	0.25	11.07	4.37
50	..	8	3.5	15.0	1.8	1.0	0.90	0.25	13.25	5.95
100	..	9	4.0	19.0	2.0	1.0	1.00	0.30	15.71	7.71
200	..	10	4.5	24.5	2.2	1.5	1.10	0.30	18.70	9.50
500	..	12	5.0	33.2	2.5	1.5	1.25	0.40	23.76	10.5

*Recommended dimensions.

(c) **Permissible Errors.**—

Denomination	Verification		Inspection	
	Errors in excess only		Excess	Deficiency
Carat (c)		mg	mg	mg
500	..	8.0		4.0
200	..	6.0		3.0
100	..	5.0		2.5
50	..	4.0		2.0
20	..	3.0	Errors same as in Verifi- cation	1.5
10	..	2.0		1.0
5	..	1.0		0.5

4. Sheet Metal Weights—(a) Materials.—Weights of denominations 10/100 carat and below shall be made of aluminium sheet which may preferably conform to NS 3 of IS: 737-1955. Weights of higher denominations shall be made of sheets of brass, aluminium, nickel silver, nickel chromium or bronze, which may preferably conform to the following:—

- (i) **Brass.**—Grade 4 of IS: 410-1955.
 (ii) **Aluminium.**—NS 3 of IS: 737-1955.
 (iii) **Nickel Silver.**—

Constituent		Per cent
Copper	..	63.0 to 66.5
Nickel	..	17.0 to 19.5
Zinc	..	Remainder

Impurities.—

Iron, max.	..	0.25
Manganese, max.	..	0.50
Lead, max.	..	0.05

(iv) **Nickel Chromium.**—As in 3 (a) (iii).

(v) **Bronze.**—As in 3 (a) (iv).

(b) **Shapes and Dimensions**—Sheet metal weights shall be square with a raised corner to facilitate manipulation (see Fig. 10). They shall have the dimensions given in Table 10.

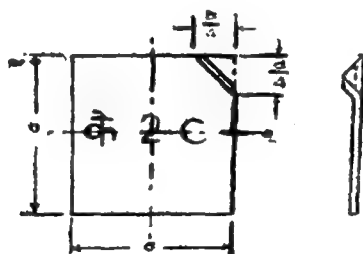


FIG. 10.—SHEET METAL CARAT WEIGHT.

TABLE 10.—NOMINAL DIMENSIONS OF SHEET METAL CARAT WEIGHTS

Denomination (Carat)			Side (a) mm
2	..	..	10
1	..	..	8
50/100	..	..	6.3
20/100	..	..	5.0
10/100	..	..	8.0
5/100	..	..	7.0
2/100	..	..	6.0
1/100	..	..	5.5
0.5/100	..	..	4.0

(c) Permissible Errors---

Denomination	Verification		Inspection	
	Errors in excess only		Excess	Deficiency
Carat (c)		mg	mg	mg
2	..	0.8		0.4
1	..	0.6	Errors same as in Verification	0.3
50/100	..	0.4		0.2
20/100	..	0.2		0.1
10/100	..	0.2		0.1
5/100	..	0.1		0.05
2/100	..	0.1		0.05
1/100	..	0.1		0.05
0.5/100	..	0.1		0.05

5. Manufacture and Finish.—The surface of the weights shall be reasonably smooth. Sheet metal weights shall be smoothly sheared and shall be free from burrs.

6. Marking.—Every weight, except weights of 50 carats and lower denominations, shall have the manufacturer's name or trade mark and the denomination indelibly stamped on it.

The denomination shall consist of the Indo-Arabic numeral prefixed and suffixed by the letters 'के' and 'c' respectively except that in the case of weights below 50 carats, only the numerals shall be marked. The size of numerals and letters indicating denominations of weights shall be at least twice the size of letters indicating the manufacturer's name or trade mark.

The markings shall be legible and deep enough to ensure indelibility over a long period, but not so deep as to crack the weight itself.

7. Packing.—The weights shall be supplied in a suitable velvet-lined box. The small sheet metal weights shall be so housed and provided with a cover of glass or any other transparent material that they will not get dislodged from their proper places. The box shall also contain a pair of forceps for manipulating the weights.

PART III

COMMERCIAL LIQUID CAPACITY MEASURES

1. General.—This Part deals with two types of cylindrical liquid measures, namely the dipping and the pouring types, and one type of conical measures. Cylindrical measures are generally used for measuring out commodities like milk while conical measures are generally used for mineral oils.

2. **Denominations.**—The denominations of the different types of measures shall be as under:—

Cylindrical Measures

Dipping Type	Pouring Type
1 litre	2 litres
500 ml	1 litre
200 ml	500 ml
100 ml	200 ml
50 ml	100 ml
20 ml	50 ml
	20 ml

Conical Measures

20 litres
10 litres
5 litres
2 litres
1 litre
500 ml
200 ml
100 ml

3. **Shapes and Dimensions.**—(a) The shape and dimensions of cylindrical measures (dipping and pouring types) shall be as shown in Figs. 11 (A) and 11 (B) and Table 11.

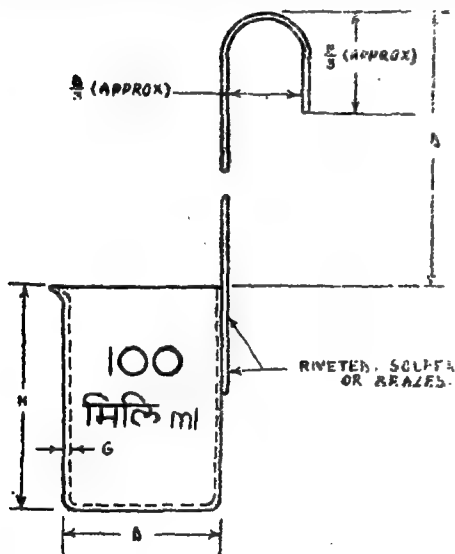


FIG. 11 (A).—DIPPING TYPE CYLINDRICAL MEASURE (SCHEMATIC).

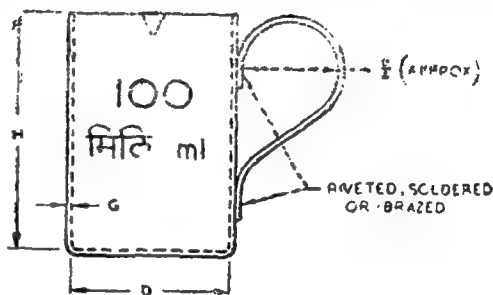


FIG. 11 (B).—POURING TYPE CYLINDRICAL MEASURE (SCHEMATIC).

TABLE 11.—NOMINAL DIMENSIONS OF CYLINDRICAL CAPACITY MEASURES

Denominations	D	H	B, max.	G, min.	(SWG)
2 litres	120	180	360	1.6	(16)
1 litre	95	142	254	1.6	(16)
500 ml	75	112	224	1.6	(16)
200 ml	55.5	83	166	1.22	(18)
100 ml	44	66	132	1.22	(18)
50 ml	35	52	104	1.22	(18)
20 ml	26	38	76	0.91	(20)

Note 1.—All dimensions in millimetres.

Note 2. Tolerance on dimensions ± 10 per cent.

(b) The shape and dimensions of conical measures shall be as shown in Fig. 12 and Table 12.

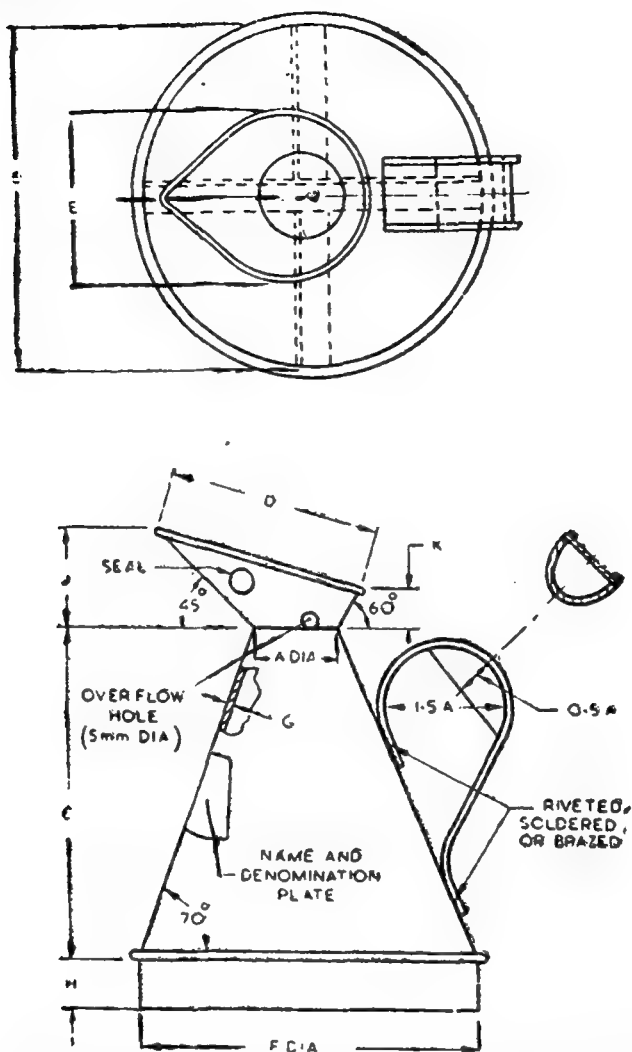


FIG. 12.—POURING TYPE CONICAL MEASURE (SCHEMATIC).

TABLE 12.—NOMINAL DIMENSIONS OF CONICAL CAPACITY MEASURES

Denomination	A	B	C	D	E	F	G, min. (SWG)	H	J	K
20 litres	97	388	388	208	194	390	0.91 (20)	12.5	86	29
10 litres	77	308	307	174	154	309	0.91 (20)	12.5	75	26
5 litres	61	244	245	147	122	247	0.71 (22)	12.5	65.5	24
2 litres	45	180	180	118	90	182	0.71 (22)	12.5	56	22
1 litre	36	143	143	95.5	72	145	0.56 (24)	12.5	45	18
500 ml	28	114	113	74	56	115	0.56 (24)	12.5	35	14
200 ml	21	84	84	53	42	86	0.56 (24)	12.5	24.5	10
100 ml	17	66	67	41	34	69	0.56 (24)	12.5	18.5	7

Note 1.—All dimensions in millimetres.

Note 2.—Tolerance on dimensions ± 10 per cent.

4. Materials—(a) Cylindrical Measures.—The body of cylindrical measures shall be pressed from aluminium alloy sheets, brass sheets or stainless steel sheets. The minimum thickness of the sheets shall be as specified in Table 11. The aluminium alloy sheets and brass sheets may preferably conform to NS 3 of IS:737—1955 and Grade 4 of IS : 410—1953, respectively.

(b) Conical Measures.—The conical measures shall be fabricated from galvanised steel sheets, aluminium alloy sheets, copper sheets, brass sheets, stainless steel sheets or tin-plate, as may be specified by the purchaser. The minimum thickness of the sheets shall be as specified in Table 12. The galvanised steel sheets, aluminium alloy sheets, brass sheets and tin-plate may preferably conform to Class I of IS : 277—1951, NS 3 of IS : 737—1955, Grade 4 of IS : 410—1953 and Grade 1 (C1) of IS : 597—1955, respectively.

(c) The handles for the measures shall be fabricated from the same material as that used for the body.

5. Manufacture and Finish.—**(a)** Measures made of brass sheets and copper sheets shall be well tinned or tin-plated uniformly all over the inside as well as the outside surfaces.

(b) The handles shall be of robust construction and shall be well formed and shaped generally as shown in Fig. 11 and Fig. 12. They shall be securely fixed to the body by means of riveting, soldering or brazing.

(c) The measures shall be free from any surface defects and indentations and shall be smoothly finished at the top.

(d) Cylindrical measures shall be provided with a well formed and proportioned spout to facilitate pouring.

(e) Conical measures shall be provided with a retaining lip to avoid spilling. The retaining lip shall be provided with a brass plug with a collar to receive the lead for the inspector's seal. A small hole, about 5mm in diameter, shall be provided at the bottom of the retaining lip to indicate the level to which the measure shall be filled and the hole shall be located on the side at right angle to the handle. The bottom of conical measures shall be suitably reinforced.

(f) The measures shall be so designed that, when they are tilted 120 degrees from the vertical, they shall become completely empty.

(g) The finished measures shall have adequate robustness for durability.

6. Permissible Errors.—

Denomination	Verification Errors in excess only		Inspection			
	Cylindrical measures ml	Conical Measures ml	Cylindrical Measures Excess ml	Conical Measures Deficiency ml	Conical Measures Excess ml	Conical Measures Deficiency ml
20 l	..	—	100	—	—	50
10	..	—	50	Error	—	25
5	..	—	30	same as	—	15
2	..	30	15	in	15	7.5
1	..	20	10	Verification.	10	5
500 ml	..	15	8		7.5	4
200 ml	..	8	4		4	2
100 ml	..	5	3		2.5	1.5
50 ml	..	3	—		1.5	—
20 ml	..	2	—		1	—

7. Marking.—(a) Every Cylindrical measure shall have the denomination and manufacturer's name or trade mark indelibly stamped on it. In the case of conical measures, the denomination and manufacturer's name or trade mark shall be either embossed on the body or indelibly marked on a name plate securely fixed to the body.

(b) The denomination shall consist of Indo-Arabic numerals and the abbreviation 'l' and 'मिलि' to indicate litre, and 'ml' and 'मिलि' to indicate millilitre. The size of numerals and letters indicating denominations on the measures shall be twice the size of the letters indicating the manufacturer's name or trade mark.

PART IV

DISPENSING MEASURES

1. General.—This Part deals with two types of dispensing measures made of glass and transparent plastic materials, used for dispensing purposes.

2. Types and Denominations.—Dispensing measures shall be of the following types and denominations:

(a) *Conical Measures.*—200 ml, 100 ml, 50 ml, 20 ml, 10 ml and 5 ml.

(b) *Beaker Measures.*—1000 ml and 500 ml.

3. Materials.—(a) *Glass Measures.*—The measures shall be made of clear and transparent glass. They shall be well annealed; free from stones, cracks and chippings; and as free as possible from blisters and other defects. Lead glass shall not be used for the measures.

(b) *Transparent Plastic Measures.*—The measures shall be made of a clear and transparent plastic material, manufactured from plasticised polyvinyl chloride or copolymer, the major constituent of which is polyvinyl chloride. The plastic material used shall not contain any constituents known to be injurious to health and likely to be extracted by contact with liquids.

4. Definition of Capacity.—The capacity corresponding to any graduation mark is defined as the volume of water at 27°C, expressed in millilitres, required to fill the measure to that graduation mark at 27°C, the observer's eye being level with the front graduation mark and the lowest point of the water meniscus appearing to touch the top edge of that mark.

5. Conical Measures.—(a) *Shape.*—The measures shall be conical as shown in Fig. 13-A to 13-G; the 50 ml measures shall be either tall or squat as shown in Fig. 13-C and 13D respectively.

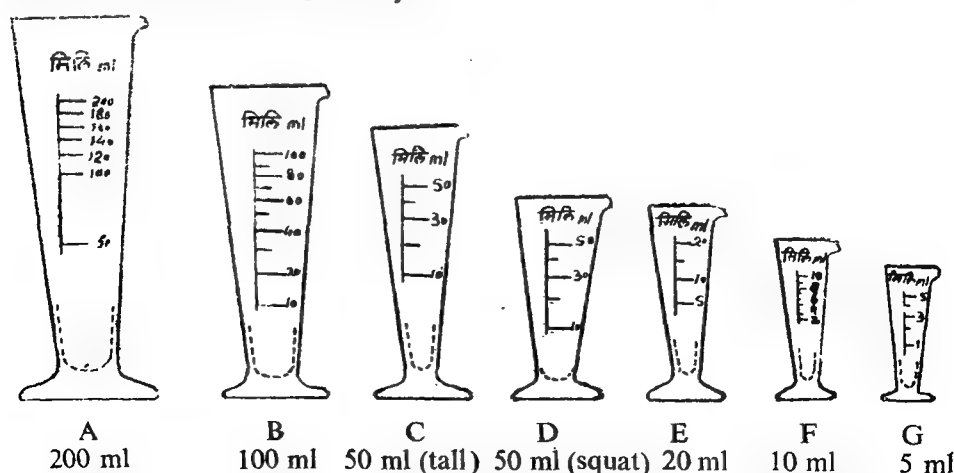


FIG. 13.—CONICAL DISPENSING MEASURE OF METRIC SERIES—TALL AND SQUAT TYPES.

(b) *Construction.*—(i) Each measure shall have a pouring lip. The form of the lip shall be such that, when the measure is filled with water to the highest graduation mark, the contents may be poured from the lip in a stream falling clear of the outside of the measure.

(ii) Each measure shall have a base on which it shall stand vertically without rocking when placed on a horizontal surface. The size of the base shall be such that the measure, when empty, shall not fall when placed on a plane inclined at 150° to the horizontal. The bottom of the measuring space, shall be uniformly rounded and shall merge smoothly into the sides of the measure.

(iii) The wall thickness of the measures shall be sufficient to ensure sturdy construction and shall not show any local departures from uniformity.

(iv) The external surface of the measure shall be a cone having an included angle of not less than 13° and not more than 14° .

(v) The overall volume of the measure shall be such that when it is filled with water to the highest graduation mark and a volume of water equal to half its nominal capacity is added to it, there shall be no overflow. But, the addition of a further quantity of water equal to quarter the nominal capacity shall result in water overflowing from the pouring lip.

(c) *Graduation.*—(i) The conical measures shall be graduated in accordance with Table 13.

TABLE 13—DETAILS OF CONICAL MEASURES

Denomi- nation	Graduated at	Numbered at	Back lines at	Lowest Gradua- tion Mark	Height of Lowest Gradua- tion mark above bottom of measuring space.	Minimum Length of Mark
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ml 200	ml 50, 100, 120, 140, 160, 180, 200.	ml 50, 100, 120, 140, 160, 180, 200.	ml 50, 100, 200.	ml 50	ml $6.5+0.5$ —	cm 2.0
100	Every 10 ml from 10 to 100 ml.	10, 20, 40, 60, 80, 100	20, 60, 100	10	$3.0+0.5$ —	1.75
50 (Tall)	Every 10 ml from 10 to 50 ml.	10, 30, 50	30, 50	10	$4.0+0.5$ —	1.5
50 (Squat)	Every 10 ml from 10 to 50 ml.	10, 30, 50	30, 50	10	$2.0+0.5$ —	1.5
20	Every 5 ml from 5 to 20 ml.	5, 10, 20	10, 20	5	$2.5+0.5$ —	1.25
10	Every ml from 2 to 10 ml.	2, 4, 6, 8, 10	2, 6, 10	2	$2.5+0.5$ —	1.0
5	Every ml from 1 to 5 ml.	1, 3, 5	3, 5	1	$2.5+0.5$ —	0.75

(ii) With the pouring lip of measure facing to the right, the front graduation marks shall be placed at right angles to, and on the right hand side of a vertical line extending from above the top graduation mark to near the base of the measure and below the bottom graduation mark.

(iii) The graduation marks shall be marked as shown in Fig. 13-A to 13-G. The marks shall be engraved or etched and they shall be of a uniform thickness not exceeding 0.3 mm, provided that they may taper slightly towards the ends. the graduation marks shall lie in planes perpendicular to the axis of the measure and shall be horizontal when the measure is standing on a horizontal surface.

(iv) Each graduation number shall be etched or engraved close to the end of the graduation mark to which it relates and in such a manner that it would be bisected by a prolongation of that graduation mark.

(v) The numbered graduation marks shall have the minimum length specified in column (7) of Table 13. The unnumbered graduation marks shall be at least two-third the length of the numbered graduation marks and clearly shorter than the numbered marks.

(vi) The height of the lowest graduation mark above the lowest point of the bottom of the measuring space shall be within the limits given in col. (6) of Table 13.

(d) *Permissible Errors.*—The permissible errors in capacity shall not exceed the figures given below (see Table 14). The permissible errors in excess or deficiency shall be the same for verification or inspection.

TABLE 14—PERMISSIBLE ERRORS IN CAPACITY OF CONICAL MEASURES

Capacity corresponding to Graduation Mark ml 1	Measures Except 50 ml (Squat) 2	50 ml (Squat) Measures 3
200, 180, 160 ..	3.0	—
140, 120, 100 ..	2.0	—
20, 80, 70, 60 ..	1.5	—
50 40 ..	1.0	1.0
30 ..	0.8	1.0
20 ..	0.6	0.8
15 ..	0.5	—
10, 9 ..	0.4	—
8, 7, 6 ..	0.3	0.6
5 ..	0.25	—
4 ..	0.20	—
3 ..	0.16	—
2 ..	0.12	—
1 ..	0.08	—

Note.—The permissible errors, apart from those of the 50 ml (squat) measure, apply to graduation marks corresponding to the capacities stated. irrespective of the nominal capacity of the conical measure concerned.

6. **Beaker Measures.**—(a) *Shape*—The measures shall be in the form shown in Fig. 14-A and 14-B.

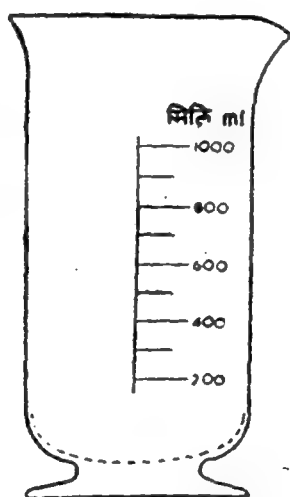
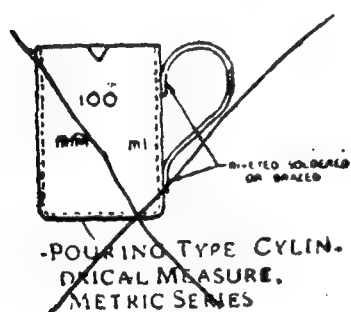
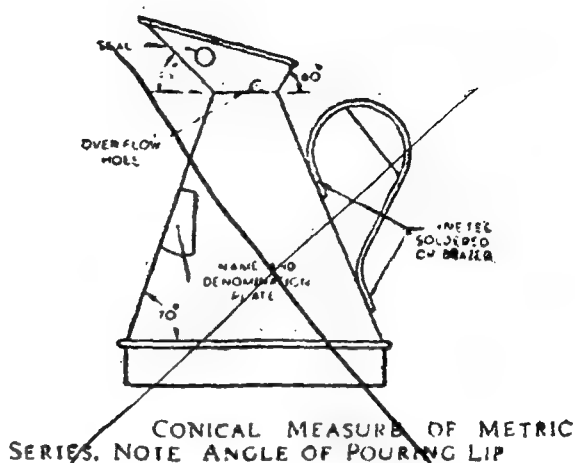
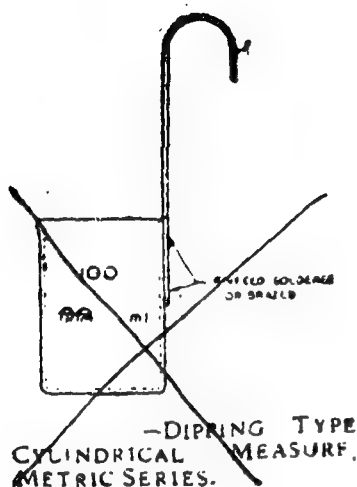


Fig. 14A—1000 ml

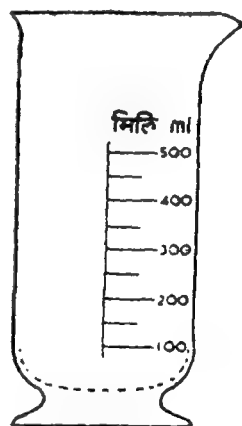


Fig. 14B—500 ml

FIG. 14.—BEAKER MEASURES

(b) *Construction.*—(i) Each measure shall be provided with a pouring lip. The form of the lip shall be such that, when the measure is filled with water to the highest graduation mark, the contents may be poured from the lip in a stream falling clear of the outside of the measure.

(ii) Each measure shall be provided with a base on which it shall stand vertically without rocking when placed on a horizontal surface. The size of the base shall be such that the measure, when empty, shall not fall when, placed on a plane inclined at 15° to the horizontal. The bottom of the measuring space shall be uniformly rounded and shall merge smoothly into the sides of the measure.

(iii) The overall volume of the measure shall be such that when the measure is filled with water to the highest graduation mark and a volume of water equal to quarter the denomination volume is added to it, the water shall not overflow.

(c) *Graduation.*—(i) The graduation marks shall be marked as shown in Fig. 14A and 14B and Table 15. The marks shall be etched or engraved and shall be of a uniform thickness not exceeding 0.3 mm, provided that they may taper slightly towards the ends. The graduation marks shall lie in planes perpendicular to the axis of the measure and shall be horizontal when the measure is standing on a horizontal surface.

(ii) Each graduation number shall be etched or engraved close to the end of the graduation mark to which it relates and in such a manner that it would be bisected by a prolongation of that graduation marks.

(iii) The distance between the highest and the lowest graduation marks and the height of the lowest graduation mark above the inside of the base of the measure shall be in accordance with col. (3) and (4) respectively of Table 15.

TABLE 15—GRADUATION AND DIMENSIONS OF BEAKER MEASURES

Denomina- tion	Graduation At	Distance between lowest and highest gradua- tion marks	Height of lowest gradua- tion mark above bottom of measuring of surface	Diameter of Top	Minimum diameter of Base	Over- all Height
(1)	(2)	(3)	(4)	*(5)	*(6)	*(7)
ml		cm	cm	cm	cm	cm
1000	200 to 1000 ml at each 100 ml; numbered at each 200 ml; un-numbered back lines at 200, 600 and 1000 ml.	11+1	4+1	12	9	23
500	100 to 500 ml at each 50 ml; numbered at each 100 ml; un-numbered back lines at 100, 300. and 500.	9+0.5	3+0.5	10	8	18

*These are only recommendatory.

(d) *Permissible Errors.*—The permissible errors in excess or in deficiency for verification or inspection shall not exceed 7 ml for 1000 ml measure and 5 ml for 500 ml measure.

7. *Marking.*—Each measure shall have permanently and legibly engraved or etched on it its denomination in Indo-Arabic numerals, the abbreviations 'ml' and 'मिलि' being used to indicate millilitres. The manufacturer's name or trade mark shall be marked on the underside of the base of each measure.

PART V

COMMERCIAL LENGTH MEASURES

(Non-Flexible)

1. *General.*—This Part deals with the non-flexible type of commercial length measures made of metal or wood. Metallic measures are usually used for measuring textiles, ribbons and similar materials and wooden measures generally in the timber trade.

2. Denominations.—The denominations of the length measures shall be as follows:

Metallic Measures

1 m
0.5 m

Wooden Measures

2 m

3. Metallic Measures.—(a) *Materials.*—The measures shall be made from mild steel or brass plated with nickel and chromium or from stainless steel. The mild steel rods and brass bars may preferably conform to Designation B of IS : 226—1955 and Grade A of IS : 319—1951 respectively.

(b) *Shape and Dimensions.*—The shape and dimensions of the measures shall be as shown in Fig. 15.

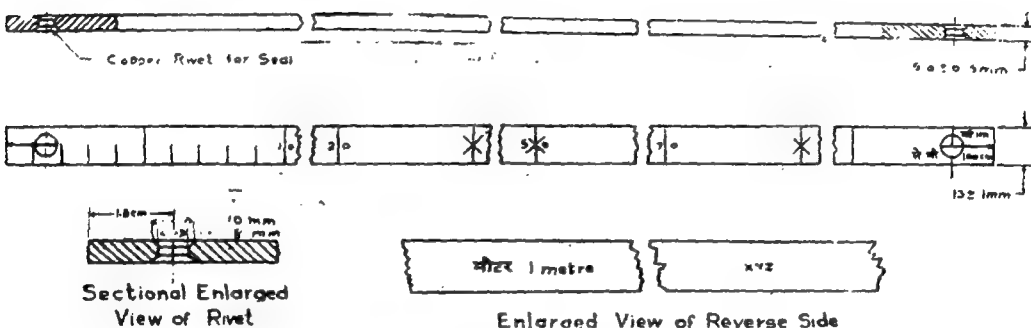


FIG. 15.—METALLIC MEASURE

(c) *Graduation*—(i) The graduation marks shall be made at every centimetre for the first ten centimetres and thereafter at every five centimetres. The graduation marks at every ten centimetres shall be numbered. The marks at the centimetre divisions shall extend over half the breadth and those at five centimetres divisions over full breadth of the measures. A cross mark shall be provided at 25 centimetres in the case of 0.5 m measure and at 25, 50 and 75 cm in the case of 1 m measure (see Fig. 15).

(i) The graduations shall be only on one side of the measure.

(d) *Permissible Errors.*—The mark at every five centimetres shall not exceed or be deficient by more than 0.25 mm, and further the error from the beginning of the measure to any line mark shall not exceed 1.0 mm, always provided that the errors on the full length of the measure shall not exceed the following limits:—

Denomination	Verification		Inspection	
	Excess	Deficiency	Excess	Deficiency
1 m	1.0 mm	0.5 mm	1.0 mm	1.0 mm
0.5 m	0.5 mm	0.25 mm	0.5 mm	0.5 mm

(e) *Provision for Stamping.*—The measures shall be provided with a copper rivet near each end (see Fig. 15) firmly fixed in a hole, countersunk on both sides, for the Inspector's stamp. An arrow head shall be marked at each end of the measure to provide the points for checking the length.

(b) In the case of metallic measures, the graduation marks and the cross marks shall be legible and deep enough to ensure indelibility over a reasonably long period of use, but not so deep as to make the measures liable to be easily bent. In the case of wooden measures, the markings shall be finished neatly, sharply and legibly, in a colour contrasting with the wood finish. They shall be visible from a distance and shall remain indelible over a reasonably long period of use.

6. **Markings.**—(i) The denomination shall be stamped, on the un-graduated side of the measure at about one-third of the total length from the beginning of the measure and the manufacturer's name or trade mark at a similar distance from the end of the measure. In the case of wooden measures, the markings shall be finished in the same manner as the graduation.

(ii) The denomination shall be given in Indo-Arabic numerals preceded by the word 'मीटर' and succeeded by the word 'metre'. The size of numerals and letters, indicating denominations of the measures, shall be twice that of the letters indicating the manufacturer's name or trade mark.

SCHEDULE VI

(See Rule 10)

Specifications For Commercial Weighing Instruments

PART I

GENERAL REQUIREMENTS

1. These specifications deal with all types of weighing instruments for commercial use and prescribes broad essential constructional requirements to ensure accuracy and long life. It also deals with marking, graduations, methods and manner of testing the tolerances, errors, sensitiveness etc.

Weighing Instruments of the following categories are included in these specifications:—

- (a) Beam Scales,
- (b) Platform Weighing Machines,
- (c) Steel Yards,
- (d) Counter Machines,
- (e) Spring Balances,
- (f) Dormant Platform Machines and Weighbridges,
- (g) Crane Weighing Machines,
- (h) Automatic Weighing Machines.

2. (a) Weighing instruments shall be of such material, design and construction as to ensure under normal conditions of service, the following:—

- (i) Maintenance of accuracy,
- (ii) Continued satisfactory functioning of operating parts,
- (iii) Adjustments remaining reasonably permanent,
- (iv) Prevention of the development of undue stresses.

(b) All weighing instruments shall be of what is commonly known as vibrating type. A vibrating type of instrument is defined as an instrument which has its indicator oscillating on either side of the position of equilibrium.

(c) Weighing instruments shall be of good workmanship and finish and shall be tested in clean condition,

(d) Weighing instruments with assembly parts, the assembly of which will affect the accuracy of the instrument, shall be so constructed as to make their use impossible without such parts. They will be suitably identified with the weighing instruments of which they form essential components.

(e) Where an instrument has an interchangeable or reversible part, the interchange or reversal shall not affect the accuracy of the instrument.

(f) **Knife Edges and Bearings.**—Knife edges and bearings used in weighing instruments shall be of such material as will have a hardness not less than 62 Rc or equivalent. They shall be so fitted as to allow the beam or steelyard to move easily and to allow the knife edges to bear upon practically the whole length of the bearings.

(g) All graduations shall consist of sharply defined uniform lines.

3. **Marking.**—(a) All weighing machines shall be prominently, legibly and indelibly marked with maker's name or a trade mark (registered under the Indian Trade Marks Act, 1940), capacity and class (wherever applicable).

(b) The marking shall be both in English as well as in Devnagari scripts.

(c) The manufacturer's name or the registered trade mark as per clause (a) above shall be such as will not be mistaken for the stamp or the seal of the verifying authority.

(d) The capacity of the weighing instruments shall be indicated in the following manner e.g.,—

“To weigh kg” “किलो के लिये”

“To weigh g” “ग्राम के लिये”

4. **Sealing.**—All weighing instruments shall be provided by the manufacturer with a plug or stud of soft metal to receive the stamp or seal. Such plug or stud shall be provided in a conspicuous part of the instrument and shall be made in such a manner as to prevent its removal without obliterating the seal of the verifying authority.

5. **Test.**—(a) All weighing instruments shall be tested in the condition of their normal use wherever practicable. Non-portable weighing instruments shall be tested in Situ in addition to any other test that may be taken at the manufacturer's or dealer's premises.

(b) Weighing instruments shall be tested for sensitiveness (wherever applicable) and for greatest error at full load.

(c) The terms “sensitiveness” and “error” appearing in clause (b) are defined as follows:—

Sensitiveness is the least weight required to be added or removed from the loading platform or pan as the case may be, to cause an appreciable movement of the indicator from its position of equilibrium.

Error is the least weight required to bring the indicator to the position of poise or equilibrium from its position of imbalance.

PART II

BEAM SCALES

1. **Definition.**—(a) A beam scale is a weighing instrument with equal arms, having three knife edges, three bearings, an indicator in the centre, and pans suspended from the end knife edges.

2. **Classes of beam scales.**—Beam Scales shall belong to one of the following classes:—

(a) **Class A**—shall include chemical and assay balances and other beam

scales provided with means of relieving all the bearings and knife edges and satisfying the requirements of Table 16.

- (b) *Class B*—shall include beam scales generally used in bullion trade satisfying the requirements of Table 17.
- (c) *Class C*—shall include beam scales satisfying the requirements of Table 18.
- (d) *Class D*—shall cover beam scales satisfying the accuracy requirements of Table 19 and distinguished from Class 'C' scales by the provision of two holes through the blade one on either side of the central knife edge.
- (e) This part does not prescribe the trades for which different classes of beam scales may be used. The following information may, however, serve as a guide:—
 - (i) Class 'A' beam scales are intended to be used for assay and for fine weighments.
 - (ii) Class 'B' scales are intended to be used in the trades mentioned below:—
 - (1) Bullion.
 - (2) Precious metals, precious stones and jewellery.
 - (3) Saffron and similar expensive commodities.
 - (4) Chemists and Druggists.
 - (5) Perfumery.
 - (iii) Class 'C' scales are intended to be used in the trades mentioned below:—
 - (1) Base metals.
 - (2) Relatively costlier commodities such as tea, coffee, tobacco, dry fruits, spices, oil-seeds etc.
 - (iv) Class 'D' scales are intended to be used for weighment of relatively cheaper commodities such as scrap iron, fuel wood, charcoal, cotton waste, vegetables, cereals etc.

3. Materials.—(a) Beam scales shall be made of either mild steel, or brass, or bronze or aluminium alloy or stainless steel.

(b) The pans shall be made of either mild steel, stainless steel, brass or bronze, hard wood or leather. Wood and leather shall be permissible only in class 'C' and 'D' beam scales only.

(c) Pans shall be suspended from the beam by metal chains or metal stirrup supports.

(d) Beam scales of capacities less than 100 kg with wooden pans shall have metal sheets covering the pans.

4. Beam fittings.—The knife edges and bearings used in beam scales shall be of one of the following types:—

- (a) "*Agate-box*" wherein agate bearings are fitted in brass or iron box, with side holes, which permit of the projecting ends of the knife edges passing into the boxes and resting on or rising to their bearings.
- (b) "*Dutch-end*" wherein the end bearings are fixed inside plates bolted together across the beam to form a shackle.
- (c) "*Swan-neck*" wherein the ends are curved and slotted, the bottom of the slot forming a knife-edge, the extremities of the beam being widened in a direction at right angles to its length so that the base of the slot is parallel to the central knife edge.

(d) "Continuous Knife-edge" wherein the knife-edges bear along their whole length.

5. **Construction.**—(a) Beam Scales shall not have a loaded weight pan.

(b) Class 'A' scales shall be provided with a glass case. It shall also be provided with level indicator and levelling screws, to facilitate levelling of the beam scale.

(c) (i) A beam scale of class 'C' and 'D' category may be provided with a balance ball or a balance box securely attached to one of the suspension chains or pans.

(ii) Beam scales with wooden pans shall be provided with balancing ball or box.

(iii) Any attachment for adjusting the balancing of beam scale shall be permanently fastened and where a balancing ball or box is used for occasional adjustments, it shall be so fixed that it cannot readily be tampered with.

(iv) Balance ball or box shall not be so large as to contain more loose material than an amount exceeding one per cent in weight of the capacity of beam scale under 50 kg or than an amount exceeding 1 kg for beam scales of capacity over 50 kg.

6. **Marking.**—Beam Scales shall be conspicuously, legibly and indelibly marked so as to indicate their class, capacity and the manufacturer's name or initials or trade mark registered under Indian Trade Marks Act, 1940. The capacity and class shall be indicated both in Devnagri as well as English script.

7. **Tests.**—(a) Beam scales shall be tested for sensitiveness and error at full load and shall comply with the requirements of Tables 16, 17, 18 and 19.

(b) Beam scales shall also be tested with the pans loaded to half the capacity. At this load, the beam scales shall not show difference exceeding 50 per cent of the permissible error at full load when the knife edges or bearings are moved, laterally, within their limits of movements. Similarly, when the load on the pan is moved to any position, the difference in weight shown shall not exceed 50 per cent of the error permissible at full load.

TABLE 16
SENSITIVENESS AND ERRORS FOR BEAM SCALES
CLASS 'A'

Capacity	Verification		Inspection	
	Sensitiveness per division of scale when fully loaded	Greatest error allowed either in excess or in deficiency when fully loaded	Sensitiveness per division of scale when fully loaded	Greatest error allowed either in excess or in deficiency when fully loaded
1	2	3	4	5
2 g	0.02 mg	0.1 mg	0.06 mg	0.2 mg
10 g	0.05 mg	0.5 mg	0.15 mg	1.0 mg
20 g	0.08 mg	0.8 mg	0.24 mg	1.6 mg
50 g	0.10 mg	1.0 mg	0.30 mg	2.0 mg
200 g	0.15 mg	1.2 mg	0.45 mg	2.4 mg
1 kg	5.0 mg	20.0 mg	15.0 mg	40.0 mg
5 kg	10.0 mg	40.0 mg	30.0 mg	80.0 mg
20 kg	20.0 mg	80.0 mg	60.0 mg	160.0 mg

TABLE 17
SENSITIVENESS AND ERRORS FOR BEAM SCALES
CLASS 'B'

Capacity	Verification		Inspection	
	Sensitiveness when fully loaded	Greatest error allowed either in excess or in deficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed either in excess or in deficiency when fully loaded
1	2	3	4	5
20 g	2.0 mg	4.0 mg	6.0 mg	8.0 mg
50 g	5.0 mg	10.0 mg	15.0 mg	20.0 mg
100 g	8.0 mg	16.0 mg	24.0 mg	32.0 mg
200 g	15.0 mg	30.0 mg	45.0 mg	60.0 mg
500 g	30.0 mg	60.0 mg	90.0 mg	120.0 mg
1 kg	60.0 mg	120.0 mg	180.0 mg	240.0 mg
2 kg	100.0 mg	200.0 mg	300.0 mg	400.0 mg
5 kg	200.0 mg	400.0 mg	600.0 mg	800.0 mg
10 kg	400.0 mg	800.0 mg	1200.0 mg	1600.0 mg
20 kg	650.0 mg	1300.0 mg	1950.0 mg	2600.0 mg
50 kg	1200.0 mg	2400.0 mg	3600.0 mg	4800.0 mg
100 kg	2500.0 mg	5000.0 mg	7500.0 mg	10000.0 mg

TABLE 18
SENSITIVENESS AND ERRORS FOR BEAM SCALES
CLASS 'C'

Capacity	Verification		Inspection	
	Sensitiveness when fully loaded	Greatest error allowed either in excess or in deficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed either in excess or in deficiency when fully loaded
1	2	3	4	5
100 g	100.0 mg	200.0 mg	300.0 mg	400.0 mg
200 g	200.0 mg	400.0 mg	600.0 mg	800.0 mg
500 g	300.0 mg	600.0 mg	900.0 mg	1200.0 mg
1 kg	400.0 mg	800.0 mg	1200.0 mg	1600.0 mg
2 kg	600.0 mg	1.2 g	1800.0 mg	2.4 g
5 kg	1.8 g	3.6 g	5.4 mg	7.2 g
10 kg	4.5 g	9.0 g	13.5 mg	18.0 g
20 kg	7.0 g	14.0 g	21.0 mg	28.0 g
50 kg	10.5 g	21.0 g	31.5 mg	42.0 g
100 kg	20.3 g	40.0 g	60.0 mg	80.0 g
200 kg	27.0 g	54.0 g	81.0 mg	108.0 g
300 kg	32.0 g	64.0 g	96.0 mg	128.0 g
500 kg	55.0 g	110.0 g	165.0 mg	220.0 g
1000 kg	105.0 g	210.0 g	315.0 mg	420.0 g

TABLE 19
SENSITIVENESS AND ERRORS FOR BEAM SCALES
CLASS 'D'

Capacity	Verification		Inspection	
	Sensitiveness when fully loaded	Greatest error allowed either in excess or in deficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed either in excess or in deficiency when fully loaded
1	2	3	4	5
200 g	800.0 mg	800.0 mg	2400.0 mg	1600.0 mg
500 g	1200.0 mg	1200.0 mg	3600.0 mg	2400.0 mg
1 kg	2.0 g	3.0 g	6.0 g	6.0 g
2 kg	3.2 g	4.5 g	9.6 g	9.0 g
5 kg	6.0 g	9.0 g	18.0 g	18.0 g
10 kg	12.0 g	18.0 g	36.0 g	36.0 g
20 kg	25.0 g	40.0 g	75.0 g	80.0 g
50 kg	30.0 g	45.0 g	90.0 g	90.0 g
100 kg	50.0 g	75.0 g	150.0 g	150.0 g
200 kg	70.0 g	100.0 g	210.0 g	200.0 g
300 kg	90.0 g	150.0 g	270.0 g	300.0 g
500 kg	130.0 g	250.0 g	390.0 g	500.0 g
1000 kg	250.0 g	500.0 g	750.0 g	1000.0 g

PART III

PLATFORM MACHINES

1. **Definition.**—A platform weighing machine is a weighing instrument with compound levers and with the goods receptacle generally in the form of a platform. The capacity of these machines shall not exceed 3000 kg and weight of the loads shall be indicated either with a steelyard or with any other form of indicator.

2. **Capacities.**—Platform weighing machines shall be of one of the capacities shown in Table 20.

3. **Design and Construction.**—(a) The steelyard in the platform weighing machine shall not have any readily removable parts except the support for counterpoise proportional weights. There shall be a stop or stops to prevent the sliding poise or poises from travelling behind the zero mark.

The minimum travel of a steelyard in platform machines shall be 10 mm either way.

(b) If a movable hutch, barrow, frame or bucket is used instead of the ordinary platform, it shall form an essential part of the machine without which the machine cannot be balanced. The movable hutch, barrow, frame or bucket shall be identified with the machine.

(c) Where a balance box is provided on the steelyards, the balance ball should not be easily accessible.

(d) The balancing arrangement for daily wear and tear shall have a range between 0.25 per cent and 0.5 per cent of the capacity of the machine and not less

than 0.125 per cent of the capacity each way. The balance box containing the balancing ball shall be securely attached to the steelyard, preferably by passing a bolt through the casing to the steelyard. The balancing ball shall be actuated by a detachable key (see Table 21).

(e) In the case of the platform machines provided with dials—

(i) racks and pinions shall be of hard wearing material;

(ii) the extremity of the index shall, in no position, be at a greater distance from the graduated surface of the dial than 5 mm; and shall be made to meet but not to obscure the graduation marks; and

(iii) the dial shall be graduated into equal parts and the minimum width apart of the graduations shall not be less than 3mm.

(f) The permissible extension of the platform on either side of the box in the case of extended platform shall be not more than 25 per cent of the length of the box.

4. Counterpoise proportional weights.—(a) All loose counterpoise proportional weights in a platform machine shall be identified with the machine by a number or any other suitable mark of identification, which shall be in delible. The counterpoise weights shall be marked with their equivalent weights in the following manner:—

=100 kg

“किलो”

(b) The counterpoise weights shall be hexagonal in shape with the slot of a suitable size to allow them being placed on the counterbalance.

(c) The counterpoise proportional weights shall be made of cast iron, preferably of Grade 10B specified in IS 210—1950 or brass of grade 3 of IS 292—1951.

(d) The proportional weights shall have one rectangular loading hole which should be undercut or tapering inside so as to hold lead securely for adjustments. The undercut hole shall be reasonably large to accommodate the lead required for normal wear and tear. The surface of the lead in the loading hole, when new, shall be at least 3 mm inside from the bottom surface of the weight.

(e) In the case of platform machines provided with proportional counterpoise weights the smallest denomination of the counterpoise weight shall be equivalent to the maximum graduation on the minor steelyard.

(f) The denomination of the proportional weights shall be in the ratio of 1: 2: 2: 5 and the total equivalent weight of all the proportional weights provided shall not exceed the capacity of the weighing machine.

Note.—While arriving at the capacity of the platform machines, the maximum graduation shown on the steelyard in the case of loose weight platform machines and on the minor steelyard in the case of no-loose weight type machine shall not be taken into account.

5. Tests.—(a) The steelyard of the platform machine shall remain horizontal at no load. With one-quarter of the maximum load or as near thereto as is practicable, the platform machine shall indicate the same weight within half the prescribed limits of error, whether the load is placed in the centre or on any of the four corners of the platform.

(b) Platform machines shall be tested to verify the accuracy of any graduation up to the total capacity. All loose counterpoise weights, where such are provided, shall be tested and suitably sealed to prevent tampering.

(c) When a platform machine is fitted with relieving gear, the prescribed limits of error shall not be exceeded when the machine is put steadily out of and

into gear. The plate or platform shall be entirely disengaged from its bearings when the machine is in relief.

(d) Dial machines shall be tested for error only. No sensitiveness test shall be taken on such machines. The permissible error at any load shall not exceed the limits prescribed in Table 20.

(e) Platform machines with the steelyard arrangement shall be tested for error as well as for sensitiveness at full load. The permissible errors and sensitiveness are indicated in Table 20.

(f) Platform machines shall not be tested for sensitiveness at loads less than full load.

6. **Sealing.**—A stud or a plug of soft metal shall be provided on the steelyard for receiving the seal in the case of steelyard weighing machines. In the case of dial machines, such a plug shall be provided either on the dial where it is accessible or otherwise on the body of the machine.

TABLE 20
SENSITIVENESS AND ERRORS FOR PLATFORM
MACHINES

Capacity	Verification			Inspection		
	Sensiti- veness when fully loaded	Greatest error allowed in excess or in deficiency when fully loaded		Sensiti- veness when fully loaded	Greatest error allowed in excess or in deficiency when fully loaded	
		Vibrat- ing Machi- nes	Platform Machines fitted with dials		Vibra- ting Machi- nes	Platform Machine fitted with dials
50 kg	15 g	30 g	One half the weight represented by the interval bet- ween consecutive graduation marks.	45 g	60 g	The weight represented by the interval between con- secutive graduation marks.
100 kg	25 g	50 g		75 g	100 g	
150 kg	30 g	60 g		90 g	120 g	
200 kg	35 g	70 g		105 g	140 g	
250 kg	45 g	90 g		135 g	180 g	
300 kg	50 g	100 g		150 g	200 g	
500 kg	90 g	180 g		270 g	360 g	
1000 kg	150 g	300 g		450 g	600 g	
1500 kg	200 g	400 g	600 g	800 g		
2000 kg	250 g	500 g	750 g	1000 g		

Note.—The capacities 150 kg and 250 kg are non-preferred and shall not be used as far as possible.

TABLE 21
RANGE OF BALANCING ARRANGEMENT FOR PLATFORM
MACHINES

Capacity	Range of Balancing arrangement		
	Maximum 0.5 per cent of capa- city	Minimum 0.25 per cent of capa- city	0.125 per cent each way
50 kg	250 g	120 g	60 g
100 kg	500 g	250 g	120 g
150 kg	750 g	370 g	180 g
200 kg	1000 g	500 g	250 g
250 kg	1.3 kg	620 g	310 g
300 kg	1.5 kg	750 g	370 g
500 kg	2.5 kg	1.25 kg	620 g
1000 kg	5.0 kg	2.50 kg	1.25 kg
1500 kg	7.5 kg	3.75 kg	1.87 kg
2000 kg	10.0 kg	5.00 kg	2.50 kg

PART IV STEELYARDS

1. **Definition.**—A steelyard is an unequal armed balance.

2. **Capacities.**—Steelyards shall be of one of the capacities mentioned in Table 22.

3. **Design and construction.**—Steelyards shall be made of either mild steel or stainless steel. The shank shall be perfectly straight. Notches or graduations on the shank shall be cut in one plane and at right angles to the shank. All steelyards shall be provided with a stop or other suitable arrangement to prevent excessive oscillation of the shank. The sliding poise and suspending hooks shall be securely attached to the instrument. All end-fittings such as the nut attached to prevent the poise carrier riding off the steelyard shall be securely fixed to the shank. The slide poise shall be freely movable and there shall be a stop to prevent it from travelling behind the zero mark. Steelyards having a counterpoise or travelling poise shall be provided with a hole or suitable means for the future adjustment of the counterpoise or travelling poise, such hole being undercut. Wherever loose material is used in the travelling poise, it shall be securely enclosed. Steelyards shall be neither reversible, nor have 3 hooks, and shall not be of counter type. Steelyards shall have a zero graduation.

4. **Tests.**—(a) Steelyards shall be tested at full load for sensitiveness and error and shall comply with the requirements of Table 22.

(b) The test for sensitiveness is carried out by loading the instrument with the maximum testing load with the steelyard in horizontal position and ascertaining that it turns with the addition of the amount shown in the table for sensitiveness.

(c) Each numbered graduation shall be tested and the instrument shall be correct whether it is carried out with increasing or decreasing loads.

(d) The intermediate graduations shall also be tested to see they are correct and are proper distance apart.

(e) Steelyards shall be tested for error by ascertaining the weight in excess or deficiency (if any) required to bring the steelyard to a horizontal position when fully loaded.

(f) No test for sensitiveness at a lower load shall be made.

5. Sealing.—Each instrument shall be provided with a plug or stud of soft metal on the front face of the shoulder of the steelyard for receiving the seal, such a plug or stud should be made irremovable by undercutting it or in some other suitable manner.

TABLE 22
SENSITIVENESS AND ERRORS FOR STEELYARDS

Capacity	Verification		Inspection	
	Sensitiveness when fully loaded	Greatest error allowed either in excess or in deficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed either in excess or deficiency when fully loaded
10 kg	5 g	7.5 g	15 g	15.0 g
20 kg	10 g	15.0 g	30 g	30.0 g
50 kg	25 g	50.0 g	75 g	100.0 g
100 kg	40 g	80.0 g	120 g	160.0 g
150 kg	60 g	120.0 g	180 g	240.0 g
200 kg	65 g	130.0 g	195 g	260.0 g
250 kg	80 g	160.0 g	240 g	320.0 g
300 kg	90 g	180.0 g	270 g	360.0 g

PART V
COUNTER MACHINES

1. Definition.—Counter Machine is an equal armed weighing instrument of a capacity not exceeding 50 kg the pans of which are above the beam.

2. Capacities.—Counter Machines shall be of one of the capacities mentioned in Table 23.

3. Design and Construction.—(a) When the beam or body has two sides, they shall be connected together by not less than two cross-bars. The supports for the pans shall be of a suitable rigid structure such as cross members strengthened by straps. Central pieces or forks shall be fixed so that they cannot twist or get out of place.

(b) Bearing surfaces and points of contact of all stays, hooks, and loops shall be of hard steel or agate. The knife edges and bearings shall be so fitted as to allow the beam to move freely and the knife edges shall practically bear upon the whole length of their working parts.

(c) A counter machine may have a balance box for minor adjustments. In such cases, the balance box shall be permanently fixed beneath the weight pan and shall be large enough to contain loose material to an amount not exceeding 1 per cent of the capacity of the machine. No other adjusting contrivance shall be used.

(d) The pans shall be made of mild steel, stainless steel, brass or bronze.

(e) The minimum fall either way on counter machines shall be as under:—

Capacity	Fall
Not exceeding 2 kg	6 mm
Above 2 kg and not exceeding 15 kg	10 mm
Above 5 kg and not exceeding 25 kg	12 mm
50 kg	13 mm

4. **Tests.**—(a) All counter machines shall be tested for sensitiveness and error at full load and shall comply with the requirements of Table 23.

(b) Counter machines shall be tested on a level plane.

(c) Where an instrument has an interchangeable or reversible part the interchange or reversal shall not affect the accuracy of the instrument.

(d) The counter machine shall be tested for sensitiveness at full load with the beam in horizontal position and ascertaining that the addition of the amount specified in the Table shall cause the pointer to rise or fall to the limit of its range of movement.

(e) no test for sensitiveness at a lower load shall be made.

(f) The counter machines shall be tested for error by ascertaining the weight in excess or deficiency (if any) required to bring the beam of the instrument to a horizontal position when fully loaded.

(g) With the pans loaded to half the capacity, no appreciable difference in the accuracy of the counter machines shall result from moving the knife edges or bearings laterally or backwards and forwards within their limits of movement.

(h) When the goods pan is not in the form of a scoop, the counter machines shall indicate the same weight within half the prescribed limits of error, if the centre of a load equal to half the capacity is placed on the goods pan anywhere within a distance from the centre equal to $\frac{1}{3}$ of the greatest length of the pan, or if the pan has a vertical side, against the middle of that side, the weight being entirely on the weight pan, but in any position on it.

(i) When the goods pan is in the form of a scoop, the counter machine shall be correct if half the full load is placed against the middle of the back of the scoop and the other half in any position on the scoop.

5. **Sealing.**—Each instrument shall be provided with a plug or stud of soft metal on a conspicuous part of the beam or body for receiving a seal. Such a plug or stud shall be made irremovable by undercutting it or in some other suitable manner.

TABLE 23

SENSITIVENESS AND ERRORS FOR COUNTER MACHINES

Capacity of Machine	Verification		Inspection	
	Sensitiveness when fully loaded	Greatest error allowed in excess or in deficiency when fully loaded	Sensitiveness when fully loaded	Greatest error in excess or in deficiency when fully loaded
1	2	3	4	5
500 g	1.3 g	1.95 g	3.9 g	3.9 g
1 kg	1.8 g	2.65 g	5.4 g	5.3 g
2 kg	2.6 g	3.5 g	7.8 g	7.0 g
5 kg	4.5 g	6.25 g	13.5 g	12.5 g
10 kg	6.0 g	9 g	18.0 g	18.0 g
15 kg	7.0 g	10 g	21.0 g	20 g
20 kg	8.5 g	13 g	25.5 g	26 g
25 kg	10.0 g	15 g	30 g	30 g
50 kg	14.0 g	28 g	42 g	56 g

PART VI

SPRING BALANCES

1. Definition.—Spring Balance is an instrument which determines the weight of an object by the extension or compression of a spring, such extension or compression being registered by means of a pointer on a dial or on a graduated scale.

2. Capacities.—Spring Balances shall be of one of the capacities mentioned in Table 24.

3. Design and Construction.—(a) Spring Balances with the pan below the spring shall be suspended permanently from a stand, support or bracket.

(b) The extremity of the index finger shall not exceed 1 mm in width and shall not be more than 3.0 mm from the scale or dial.

(c) The scale shall be graduated into equal parts, and the width apart of the graduations shall be not less than 2 mm for a capacity of 15 kg and under, and not less than 3 mm for a capacity of 20 kg and above.

(d) The weight corresponding the interval between consecutive graduation marks shall not exceed the values given in Table 24.

(e) When the graduation commences at a fixed load, the position of the index when there is no load, shall be clearly indicated by a zero mark.

(f) When a spring balance is provided with an adjustable indicator, the range of adjustment shall not exceed 1 per cent of the capacity of the instrument except in the case of instruments used for mixing purposes where it shall not exceed 2 per cent.

(g) The body shall be constructed either of brass, or cast iron, or any other suitable material, and shall be sufficiently robust in construction. If pans are provided for the balance, they shall be made of brass, bronze, cast iron, mild steel or stainless steel. Metal chains or metal stirrup supports shall be provided if pans are suspended. Back and pinions, if provided, shall be made of hard wearing material.

4. Tests.—(a) When the pan is below the spring, the prescribed limits of error shall not be exceeded wherever the load is placed on it.

(b) Where the pan is above the spring—

(i) when the goods pan is not in the form of a scoop, the instrument shall indicate the same weight within half the prescribed limits of error, if the centre of a load equal to half the capacity is placed on the pan anywhere within the distance from the centre equal to the $\frac{1}{3}$ rd of the greatest length of the pan or if that pan has a vertical side against the middle of that side;

(ii) when the pan is in the form of a scoop, the spring balance shall be correct, if half the full load is placed against the middle of the back of the scoop and the other half in any position on the scoop.

(c) Each numbered graduation shall be tested and the intermediate graduation may also be tested.

(d) The instrument shall be correct whether the test is made by increasing or decreasing loads provided that in either case the spring shall be allowed to vibrate before the reading is taken.

(e) The instrument shall be tested for ability to recover by allowing the load equal to its maximum capacity remaining on the same for a period of 24 hours and then after the expiry of 4 hours tested for accuracy, the load being removed in the meantime.

(f) Spring Balances shall not be tested for sensitiveness.

5. **Sealing.**—Spring Balances shall be fitted with a soft metal plug to receive a seal and wherever practicable, this plug shall pass through the dial or frame. The plug or stud shall be so supported as to allow no risk of injury to the instrument.

TABLE 24
PERMISSIBLE ERRORS FOR SPRING BALANCES

Capacity	Weight corresponding to interval between consecutive graduations shall not exceed	Maximum Permissible Error		Remarks
		Verification	Inspection	
500 g	5.0 g	A weight corresponding to a quarter of the interval between successive graduations.	A weight corresponding to half the interval between successive graduations.	While fixing the diameter of effective circle on dial of one revolution, a blank space of 20 mm at the end of graduation has to be provided. The minimum width apart of graduations shall not be less than 2.00 mm for capacities from 500 g to 15 kg and 3.0 mm for the rest of the sizes. In the case of multi-revolution spring balances, the minimum blank space will not apply.
1 kg	5.0 g			
2 kg	20 g			
3 kg	20 g			
5 kg	20 g			
10 kg	50 g			
15 kg	50 g			
20 kg	100 g			
30 kg	100 g			
50 kg	250 g			
100 kg	500 g			
150 kg	1.0 g			
200 kg	1.0 g			
300 kg	1.0 g			
500 kg	2.0 g			

PART VII

WEIGHBRIDGES

1. **Definition.**—Weighbridge is a weighing instrument constructed with compound levers with the indicator system carried on foundations separate from the lever systems to weigh loads of a capacity of 3,000 kg and over, through the medium of proportional weights or indicating mechanism.

Note.—Weighbridges of 2,000 kg and below, commonly known as Dormant Platform Machines, are also included in this Part.

2. **Capacities.**—Weighbridges shall be of one of the capacities mentioned in Table 25.

3. **Design and Construction.**—(a) The steelyard of a weighbridge shall not involve any readily removable parts except the support for the counterpoise. There shall be one or more stops to prevent the sliding poise or poises from travelling behind the zero mark.

(b) The minimum travel of the steelyard in weighbridges shall be 13 mm bothways.

(c) If a movable hutch, barrow, frame or bucket is used instead of the ordinary platform, it shall form an essential part of the machine without which it cannot be balanced.

(d) All loose counterpoises shall be identified with the machines by a number or other sufficient marks of identification which shall be indelible. They shall be marked with their equivalent weights in the following manner:—

=100 kg

(e) Proportional weights shall be of the hexagonal shape with a slot of a suitable size to allow them being placed on the counter balance.

(f) The proportional weights shall be made of cast iron preferably of the grade 10B of IS : 210—1950 or brass of grade 3 of IS : 292—1951. The proportional weights shall have one rectangular loading hole which should be undercut or tapered so as to hold load securely for adjustment. Surface of the load in loading hole, when new, shall be at least 3 mm inside from the bottom surface of the weight.

(g) The smallest denomination of the proportional weight shall be equivalent to the maximum graduation on the minor steelyard.

(h) The denomination of the proportional weight shall be in the ratio of 1 : 2 : 2 : 5 and the total equivalent weight of all the proportional weights shall not exceed the total capacity of the weighbridge.

Note.—While arriving at the capacity of the weighbridge, the maximum graduation shown on the steelyard in the case of loose weight weighbridges and on the minor steelyard in the case of no loose weight type weighbridge shall not be taken into account.

(i) The balancing arrangement for daily wear and tear shall have a range between 0.25 per cent and 0.5 per cent of the capacity of the machine and not less than 0.125 per cent of the capacity each way (see Table 26). The balance box containing the balancing ball shall be securely attached to the steelyard, preferably by passing a bolt through the casing of the steelyard. The balancing ball shall be actuated by a detachable key.

(j) The following provisions shall apply to weighbridges with dials:—

(i) Rack and Pinions shall be of hard wearing material.

(ii) The extremity of the index shall, in no position, be at a greater distance from the graduated surface of the dial than 5 mm and shall be made to meet but not to obscure the graduation mark (except where dual graduations are made).

(iii) The dial shall be graduated into reasonably equal parts and minimum width apart of the graduation shall not be less than 3 mm.

(k) (i) The frame work shall be built up of mild steel rolled sections or cast iron or steel casting. It shall be of rigid structure, strengthened suitably so that it will be capable of resisting any vibration and shall not throw the lever system out of alignment due to any subsidence of the foundation.

(ii) Brackets shall be cast on the side frames to support the framework.

(l) (i) Where relieving gear is fitted, the relieving apparatus shall disengage

the under-lever and save the knife edges from shock or wear.

(ii) The plate or platform of the machine shall be entirely disengaged from its bearings when the machine is in relief.

(m) All knife edges and steel bearings shall be of special high quality steel accurately lapped to gauge after hardening and shall be interchangeable (steel knife edges and bearings which are welded into iron may also be permitted). Knife edges and steel bearings shall be readily replaceable without dismantling so that the weighbridge can be maintained in perfect working order. The knife edges and bearings shall be accurately and firmly secured in machine beds preferably by two shanks and nuts or alternatively by bolts and nuts or setscrews. All knife edges and bearings shall be protected against dirt and corrosion.

(n) The platform shall be of steel chequered plate and shall be rigid. Accessibility to the pit shall be ensured.

4. Tests.—(a) All weighbridges shall be tested for sensitiveness and error at full load and shall comply with the requirements of Table 25. When fully loaded, the load being equally distributed on the platform, it shall indicate the weight correctly with no greater error in excess or deficiency (if any) than permitted.

(b) In the case of dial machines, tests of numbered graduations up to the total capacity of the machine, or to such smaller capacities as the minimum graduation on the steelyard may indicate, shall be carried out.

(c) Loose counterpoises, where they are provided, shall be tested.

(d) The machines shall be tested by adding loads equal to the major divisions or notches, and then ascertaining that additional load equal to the value of one notch or division is correctly indicated.

(e) The test of dial machines shall be carried out in a similar manner with the exception of sensitiveness test.

(f) The test for sensitiveness and error other than in dial machines, is to be made at maximum load or as near thereto as possible.

(g) With one quarter of the maximum load or as near thereto as is practicable, the weighbridge shall indicate the same weight within half the prescribed limits of error whether the load is placed in the middle or at any of the corners of the platform.

(h) When provided with a relieving gear, the prescribed limits of error shall not be exceeded when the machine is steadily put out of or in to gear.

5. Marking.—All parts of each weighbridge shall be indelibly numbered marked so as to facilitate erection at site.

6. Sealing.—(a) Dial machines shall be fitted with a soft metal plug to receive a seal and wherever practicable, this plug shall be passed through the dial and frame. The plug or stud fitted on the dial shall be so supported as to allow no risk of injury to the instrument.

(b) On weighbridges other than dial machines, a plug or stud shall be provided in a conspicuous position on the indication lever or steelyard.

TABLE 25
SENSITIVENESS AND ERRORS FOR WEIGHBRIDGES

Capacity of Machines	Verification			Inspection	
	Sensi- tiveness when fully loaded	Greatest error allowed in excess		Sensiti- veness when fully loaded	Greatest error allowed in excess or in deficiency when fully loaded
		Vibrating Machines	Machines fitted with dials		
1000 kg	700 g	700 g		2.1 kg	1.4
2000 kg	900 g	900 g		2.7 kg	1.8
3000 kg	1.25 kg	1.25 kg		3.75 kg	2.5
5000 kg	1.5 kg	1.8 kg	One half the weight represen- ted by the inter- val between consecutive gra- duation marks.	4.5 kg	3.6
10000 kg	2.3 kg	2.7 kg		6.9 kg	5.4
15000 kg	2.5 kg	3.0 kg		7.5 kg	6.0
20000 kg	3.0 kg	4.5 kg		9.0 kg	9.0
25000 kg	3.5 kg	5.4 kg		10.5 kg	10.8
30000 kg	3.8 kg	6.1 kg		11.4 kg	12.2
40000 kg	4.2 kg	7.3 kg		12.6 kg	14.6
60000 kg	5.0 kg	9.0 kg		15.0 kg	18.0
80000 kg	5.5 kg	10.5 kg		16.5 kg	21.0
100000 kg	6.4 kg	12.7 kg		19.2 kg	25.4
200000 kg	8.2 kg	19.0 kg		24.6 kg	38.0

The weight
represented by the
interval between
consecutive
graduation marks

TABLE 26

RANGE OF BALANCING ARRANGEMENT FOR WEIGHBRIDGES

Capacity	Range of Balancing Arrangement		
	Maximum 0.5 per cent of capacity	Minimum 0.25 per cent of capacity	0.125 per cent each way
1000 kg	5 kg	2.5 kg	1.3 kg
2000 kg	10 kg	5.0 kg	2.5 kg
3000 kg	15 kg	7.5 kg	3.7 kg
5000 kg	25 kg	12.5 kg	6.2 kg
10000 kg	50 kg	25.0 kg	12.5 kg
15000 kg	75 kg	37.5 kg	18.7 kg
20000 kg	100 kg	50.0 kg	25.0 kg
25000 kg	125 kg	62.5 kg	31.7 kg
30000 kg	150 kg	75.0 kg	37.5 kg
40000 kg	200 kg	100.0 kg	50.0 kg
60000 kg	300 kg	150.0 kg	75.0 kg
80000 kg	400 kg	200.0 kg	100.0 kg
100000 kg	500 kg	250.0 kg	125.0 kg
200000 kg	1000 kg	500.0 kg	250.0 kg

PART VIII

CRANE WEIGHING MACHINES

1. Definition.—Crane Machine is a weighing instrument specially constructed to be suspended from the hook of a crane and is fitted with a hook for lifting the loads and may be constructed upon the lever or spring principle.

2. Capacities.—Crane machines shall be of one of the capacities mentioned in Table 27.

3. Design and Construction.—(a) A crane machine shall be sufficiently strong to withstand wear and tear in the exacting conditions under which it works.

(b) No crane machine shall become a permanent link in the lifting gear. All working parts shall be suitably protected from the dust and damp of the atmosphere. In a lever machine, the steelyard shall be made of corrosion resisting steel to resist the atmospheric influence and shall be sufficiently rigid and accurate.

(c) In a dial machine, the rack and pinions shall be of suitable hard wearing material.

(d) The range of balancing or adjusting arrangement shall not exceed 2 per cent of the capacity of the machine.

(e) There shall be free movement of steelyard and on a dial machine, the dial indicator shall work freely and return to its initial starting point after the load is removed.

4. Tests.—(a) Crane Machines of the lever type shall be tested for sensitiveness and error at full load and shall comply with the requirements of Table 27.

(b) Spring Crane Machines shall not be tested for sensitiveness.

(c) For spring machines, the limits of error shall be double than those of lever machines and are given in Table 28.

(d) Each numbered graduation shall be tested as far as practicable.

5.—Sealing.—Crane Machines shall be fitted with a plug or stud in a conspicuous part either on steelyard or on the dial of machine to receive the seal.

TABLE 27
SENSITIVENESS AND ERRORS FOR CRANE WEIGHING MACHINES
LEVER TYPE

Capacity	Verification		Inspection	
	Sensitiveness when fully loaded	Greatest error allowed in excess or in deficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed in excess or in deficiency when fully loaded
500 kg	80 g	160 g	240 g	320 g
1000 kg	700 g	700 g	2.1 kg	1.4 kg
2000 kg	1.0 kg	1.0 kg	3.0 kg	2.0 kg
3000 kg	1.2 kg	1.2 kg	3.6 kg	2.4 kg
5000 kg	1.5 kg	1.5 kg	4.5 kg	3.0 kg
10000 kg	2.5 kg	3.0 kg	7.5 kg	6.0 kg
15000 kg	3.0 kg	3.5 kg	9.0 kg	7.0 kg
20000 kg	3.5 kg	4.5 kg	10.5 kg	9.0 kg
30000 kg	4.0 kg	6.0 kg	12.0 kg	12.0 kg
50000 kg	4.5 kg	8.0 kg	13.5 kg	16.0 kg
100000 kg	6.5 kg	13.0 kg	19.5 kg	26.0 kg
200000 kg	8.0 kg	18.0 kg	24.0 kg	36.0 kg

TABLE 28

SENSITIVENESS AND ERRORS FOR CRANE MACHINES—DIAL TYPE
(Spring and Flexure)

Capacity	Weight corresponding to interval between successive graduation shall not exceed	Permissible Maximum Error		Remarks
		Verification	Inspection	
500 kg	5 kg			
1000 kg	5 kg			
2000 kg	5 kg			
3000 kg	10 kg			
5000 kg	25 kg			
10000 kg	50 kg			
15000 kg	50 kg			
20000 kg	100 kg			
30000 kg	100 kg			
50000 kg	250 kg			
100000 kg	500 kg			
200000 kg	500 kg			

A weight corresponding to half the interval between successive graduations.

A weight corresponding to the interval between successive graduations.

The Maximum width apart of graduations shall not be less than 3 mm.

PART IX

AUTOMATIC WEIGHING MACHINES

1. Definition.—An automatic weighing machine may be defined as any weighing scale which has an integral mechanism for automatically admitting and discharging a load, and may be fitted with an apparatus for counting or otherwise recording the number of loads handled.

2. Capacities.—Automatic machines shall be of the capacities as agreed upon between the purchaser and the seller.

3. Design and Construction.—(a) Automatic weighing machines and their integral parts, shall be identified with the machines, by an indelible number or other mark of identification.

(b) The adjusting mechanism shall be suitably secured or constructed so that it cannot be tampered with.

(c) The capacity of the automatic weighing machine shall be marked legibly on a conspicuous part of the machine.

4. Tests.—(a) Automatic Machines shall be tested for errors according to the requirements of Table 29.

(b) The accuracy of the output of the machine shall be verified by re-weighing in another weighing instrument not less than 20 continuous loads, or where practicable, the machine may be tested directly by the application of standard weights.

(c) In testing totalising machines, not less than 50 loads shall be passed over the machine, namely, 10 minimum loads, 10 maximum loads and 30 loads of the mean between the minimum and the maximum.

5. Sealing.—Automatic Machines shall be fitted with a plug on the beam, shank or dial of the machine to receive the seal.

TABLE 29

PERMISSIBLE ERRORS FOR AUTOMATIC MACHINES

Use	Capacity	Error (Verification or Inspection)	
Weighing small loads of tea, coffee etc.,	20 g and upwards.	0.5 per cent of the load in excess only	
Weighing grain etc.	5 kg and upwards.	0.25 per cent of the load, in excess of or deficiency.	The allowances in these cases are subject to the proviso that the error tolerated shall not exceed the weight represented by half a minimum division, marked on the dial or steelyard.
Weighing Coal etc.	50 kg and upwards.	0.5 per cent of the load in excess or deficiency.	
"Totalising" machines used for weighing coal etc.	500 kg and upwards.	0.5 per cent of the total load of 50 weighings, in excess or deficiency.	

SCHEDULE VII

(See Rule 12)

ABBREVIATIONS OF DENOMINATIONS

1. Decimal Multiples and Sub-multiples:

Prefix		Value in terms of unit	Abbreviation
kilo	..	1000	k
centi	..	0.01 (10^{-2})	c
milli	..	0.001 (10^{-3})	m
micro	..	0.000,001 (10^{-6})	/u

2. Weights:

Denomination		Value	Abbreviation
tonne	..	1000 kg	t
quintal	..	100 kg	q
kilogram	..	1 kg	kg
gram	..	1 g	g
milligram	..	1 mg	mg
carat	..	200 mg	c

3. Capacity:

Denomination		Value	Abbreviation
kilolitre	..	1000 l	kl
litre	..	1 l	l
millilitre	..	1 ml	ml

<i>Denomination</i>		<i>Value</i>	<i>Abbreviation</i>
4. Volume:			
cubic metre	..	m ³	m ³ or cu m *
cubic centimetre	..	cm ³	cm ³ or cu cm *
cubic millimetre	..	mm ³	mm ³ or cu mm *
5. Length:			
kilometre	..	1000 m	km
metre	..	1 m	m
centimetre	..	1 cm	cm
millimetre	..	1 mm	mm
micron	..	1/1000 mm or 10 ⁻³ mm	um
6. Area:			
square kilometre	..	1,000,000 m ²	km ² or sq km *
square metre	..	m ²	m ² or sq m *
square centimetre	..	cm ²	cm ² or sq cm *
square millimetre	..	mm ²	mm ² or sq mm *

*Both these abbreviations are current, but the first set should preferably be used.

Note.—No change shall be made in the abbreviation to indicate plurality.

SCHEDULE IX

(See Rule 15)

Procedure to be followed for Inspection, Verification and Stamping of Commercial Weights and Measures and Weighing and Measuring Instruments used or for use in Transactions**PART I.—WEIGHTS AND MEASURES**

1. Weights.—(a) All weights before stamping shall be verified for correctness against the corresponding working standard weight in the appropriate working standard balance subject to the permissible errors specified.

(b) Weights shall be stamped on the lead in the loading hole at the bottom of the weight, provided that weights without an adjusting hole shall be stamped on the under surface.

(c) No weights used in gold and silver trade shall be stamped unless they are bullion weights.

(d) No weights used in pearl and precious stone trade shall be marked unless they are carat weights.

2. Liquid Measures of capacity.—(a) Liquid capacity measures shall be tested by filling the working standard measure with water and emptying the contents of the working standard into the measure under test.

(b) In testing a glass measure, the capacity of which is not defined by the brim, the level of the water shall be taken at the bottom of the meniscus.

(c) Where the capacity is indicated by a line, the measure shall be tested to the bottom of the line.

3. Measures of Length.—(a) Every measure of length shall be verified by comparison with the working standard.

(b) A link measure, or woven metallic or steel tape measure, shall be tested when subjected to a tension or pull as follows:—

Link Measures	.. 8 kg
Woven Metallic Tape Measure	.. 1 kg
Steel Tape Measure	.. 5 kg

(c) The measure under test shall be supported throughout its whole length on a plane and even base.

(d) Tape measures which are intended to be used in cases may be accepted for verification and stamping if submitted even without the case.

(e) All non-flexible measures of length shall be stamped on the rivets provided in the measure.

(f) In the case of tape measure, the stamp shall be placed on the metal strip at the beginning of the measure.

(g) In the case of link measures, the stamp shall be placed either on a metal label or disc permanently attached to the measure or on the brass handle.

4. Volume Measures.—(a) All measures of volume shall be examined with the subject of discovering flaws or want of straightness and proper right angles at the corners.

(b) Every measure of volume shall be verified by comparing length of each side against the working standard of length at or near the normal temperature.

(c) The limits of errors in the case of lengths of the sides of measures of volume shall be the same as prescribed for linear measures.

(d) All measures of volume shall be stamped near the top edge or brass plate securely fastened to them.

PART II.—WEIGHING AND MEASURING INSTRUMENTS

1. **General.**—Weighing and Measuring instruments shall be tested to conform to the specifications given in Schedule VI.

2. **Beam Scales.**—(a) On beams scales, the verification stamp shall be placed on the stud or plug on the beam, immediately under or over the central knife edge.

(b) The Inspector may stamp the plug or stud in the same manner as he would stamp a weight.

3. **Counter-machines, spring balances, steelyards and automatic machines.**—The verification stamp shall be placed upon the plug or stud provided in the instrument for that purpose.

4. **Platform Machines and Weighbridges.**—(a) Weighbridges, Platform Machines and such other weighing instruments as the Controller may specify in this behalf, shall be verified and stamped *in situ* in addition to any preliminary test in the manufacturer's or dealer's premises. Such a preliminary test shall be made at the request of the manufacturer or dealer.

(b) The verification stamp shall be placed upon the plug or stud provided for the purpose in the machine.

5. **Crane Machines.**—(a) Hydraulic Machine in which it is necessary in order to get a correct weight indication, to twist the load hook, shall not be stamped unless a prominent notice to this effect is permanently affixed to the machine.

(b) The verification stamp shall be placed upon the plug or stud provided for the purpose in the machine.

SCHEDULE X

(See Rule 18)

Fees payable for Verifying and Stamping Commercial Weights and Measures and Weighing and Measuring Instruments used in transactions for Trade or Commerce

1. Weights:

DENOMINATION

(a) Bullion Weights—

Fees per piece

20 kg	..	..	..	Re. 1.00
10 kg	..	..	..	Re. 1.00
5 kg	..	..	..	Re. 1.00
2 kg	..	..	..	Re. 1.00
1 kg	..	..	..	Re. 1.00
500 g	..	..	..	50 nP.
200 g	..	..	..	50 nP.
100 g	..	..	..	50 nP.
50 g	..	..	..	50 nP.
20 g	..	..	..	50 nP.

DENOMINATION					
<i>Bullion Weights—</i>					<i>Fees per piece</i>
10 g	..	..	..	..	50 nP.
5 g	..	..	..	..	50 nP.
2 g	..	..	..	..	50 nP.
1 g	..	..	..	..	50 nP.
500 mg	..	..	..	..	25 nP.
200 mg	..	..	..	..	25 nP.
100 mg	..	..	..	..	25 nP.
50 mg	..	..	..	..	25 nP.
20 mg	..	..	..	..	25 nP.
10 mg	..	..	..	..	25 nP.
5 mg	..	..	..	..	25 nP.
2 mg	..	..	..	..	25 nP.
1 mg	..	..	..	..	25 nP.

(b) *Brass Weights (Other than Bullion)—*

1 kg	..	..	..	..	50 nP.
500 g	..	..	..	..	15 nP.
200 g	..	..	..	..	15 nP.
100 g	..	..	..	..	15 nP.
50 g	..	..	..	..	15 nP.
20 g	..	..	..	..	15 nP.
10 g	..	..	..	..	15 nP.
5 g	..	..	..	..	15 nP.
2 g	..	..	..	..	15 nP.
1 g	..	..	..	..	15 nP.

(c) *Sheet Metal Weights (Other than Bullion)—*

500 mg	..	..	..	..	15 nP.
200 mg	..	..	..	..	15 nP.
100 mg	..	..	..	..	15 nP.
50 mg	..	..	..	..	15 nP.
20 mg	..	..	..	..	15 nP.
10 mg	..	..	..	..	15 nP.
5 mg	..	..	..	..	15 nP.
2 mg	..	..	..	..	15 nP.
1 mg	..	..	..	..	15 nP.

(d) *Iron and Steel Weights—*

50 kg	..	..	..	..	50 nP.
20 kg	..	..	..	..	50 nP.
10 kg	..	..	..	..	50 nP.
5 kg	..	..	..	..	50 nP.
2 kg	..	..	..	..	50 nP.
1 kg	..	..	..	..	50 nP.
500 g	..	..	..	..	15 nP.
200 g	..	..	..	..	15 nP.
100 g	..	..	..	..	15 nP.

DENOMINATION

(e) Carat Weights.—

Fees per piece

500 c	..	..	..	50 nP.
200 c	..	..	..	50 nP.
100 c	..	..	..	50 nP.
50 c	..	..	..	50 nP.
20 c	..	..	..	50 nP.
10 c	..	..	..	50 nP.
5 c	..	..	..	50 nP.
2 c	..	..	..	25 nP.
1 c	..	..	..	25 nP.
50/100 c	..	..	..	25 nP.
20/100 c	..	..	..	25 nP.
10/100 c	..	..	..	25 nP.
5/100 c	..	..	..	25 nP.
2/100 c	..	..	..	25 nP.
1/100 c	..	..	..	25 nP.
0.5/100 c	..	..	..	25 nP.

2. Liquid capacity measures (Including dispensing measures):

Above 100 litres

Re. 1.00 for the
first 100 litres
+ Re 1.00 for
every additional
100 litres or part
thereof.

100 l	..	..	..	Re. 1.00
50 l	..	..	..	Re. 1.00
20 l	..	..	..	Re. 1.00
10 l	..	..	..	Re. 1.00
5 l	..	..	..	50 nP.
2 l	..	..	..	50 nP.
1 l	..	..	..	50 nP.
500 ml	..	..	..	25 nP.
200 ml	..	..	..	25 nP.
100 ml	..	..	..	25 nP.
50 ml	..	..	..	25 nP.
20 ml	..	..	..	25 nP.
10 ml	..	..	..	25 nP.
5 ml	..	..	..	25 nP.
2 ml	..	..	..	25 nP.
1 ml	..	..	..	25 nP.

3. Length measures:

10 metres and above	..	..	Re. 1.00
Above 1 metre to 10 metres	..	..	50 nP.
1 metre and 0.5 metre	..	..	25 nP.

4. Weighing instruments other than beam scales of class C and D:

<i>Capacity</i>	<i>Fee per instrument</i>
Above 50 metric tonnes ..	Rs. 50.00 for the first 50 metric tonnes— Rs. 10.00 for each additional 25 metric tonnes or part thereof.
Above 25 metric tonnes and not exceeding 50 metric tonnes ..	Rs. 50.00
Above 10 metric tonnes and not exceeding 25 metric tonnes ..	Rs. 30.00
Above 5 metric tonnes and not exceeding 10 metric tonnes ..	Rs. 20.00
Above 1 metric tonne and not exceeding 5 metric tonnes ..	Rs. 15.00
Above 250 kg and not exceeding 1 metric tonne ..	Rs. 10.00
Above 50 kg and not exceeding 250 kg ..	Rs. 5.00
Above 20 kg and not exceeding 50 kg ..	Rs. 3.00
Above 10 kg and not exceeding 20 kg ..	Rs. 2.00
Above 500 g and not exceeding 10 kg ..	Rs. 1.50
Not exceeding 500 g ..	Rs. 1.00

Note 1.—Where a weighing instrument has 2 sets of graduations, (one marked for seers and maunds or for lbs. and Cwts. and the other for metric units), two separate fees are payable.

Note 2.—Where 2 weigh tables or platforms are connected to one steelyard or office mechanism, two separate fees in accordance with the capacity of the respective weigh tables or platforms are payable.

5. Beam Scales Class C and D:

	<i>Rs.</i>
Above 1 metric tonne ..	15.00
Above 250 kg and not exceeding 1 metric tonne ..	6.00
Above 50 kg and not exceeding 250 kg ..	4.00
Above 20 kg and not exceeding 50 kg ..	2.50
Above 10 kg and not exceeding 20 kg ..	2.00
Above 500 g and not exceeding 10 kg ..	1.50
Not exceeding 500 g ..	0.75

6. Measuring Instruments (Petrol Pumps):

<i>Capacity</i>	<i>Fees per instrument</i>
(a) Exceeding 100 litres ..	Rs. 20.00 for the first 100 litres + Rs. 10.00 for each additional 50 litres or part thereof subject to a maximum of Rs. 250.00
(b) Exceeding 50 litres but not exceeding 100 litres ..	Rs. 20.00
(c) Exceeding 25 litres, but not exceeding 50 litres ..	Rs. 15.00
(d) Not exceeding 25 litres ..	Rs. 10.00

SCHEDULE XI
(See Rule 27)
LICENSING FORMS
FORM 'A'

OFFICE OF THE SUPERINTENDENT OF WEIGHTS AND MEASURES
HIMACHAL PRADESH

*Licence to manufacture/repair weights, measures, weighing instruments
or measuring instruments*

Licence No. Year

(1) The Superintendent of Weights and Measures, Himachal Pradesh Administration hereby grants to

Name and Address }
of Party or Parties }

a licence to manufacture/repair the following:—

(Include details of the types of
weights, measures, weighing inst-
truments or measuring instru-
ments that are licenced to be
manufactured/repared by the
party).

(2) The licence is valid for the party named above in respect of his workshop located at

(3) This licence is valid from to

(4) The manufacturer/repairer shall comply with the conditions noted below. If he fails to comply with any one of these, his licence is liable to be cancelled.

(5) The trade mark/monogram being used by the manufacturer is as under:—

.....
.....

Signatures,
Superintendent of Weights and Measures,
Himachal Pradesh Administration, Simla.

Date
Place



Note.—In the case of firm, its name with the names of all its members should be given in paragraph I.

CONDITIONS OF LICENCE

1. The person in whose favour this licence is issued shall—

- (a) comply with all the relevant provisions of the Act and Rules for the time being in force;
- (b) not encourage or countenance any infringement of the provisions of the Act, or the Rules for the time being in force and shall report without delay to the Inspector any infringement that may come to his notice;
- (c) keep this licence exhibited in some conspicuous part of the premises to which it relates;
- (d) comply with any general or special directions that may be given by the Superintendent of Weights and Measures of Himachal Pradesh Administration;
- (e) surrender the licence if and when required to do so by the Superintendent or any other Officer employed under the Act.

2. Every condition prescribed after the issue of this licence shall, if notified in the Official Gazette, be binding on the person/persons to whom the licence has been granted.

FORM 'B'

OFFICE OF THE SUPERINTENDENT OF WEIGHTS & MEASURES
HIMACHAL PRADESH

Licence to a dealer in weights, measures, weighing instruments or measuring instruments

Licence No. Year

(1) The Superintendent of Weights and Measures, Himachal Pradesh Administration hereby grants to

(Name and address of
Party or Parties)
.....

a licence to deal in the following:—

(Indicate details of the types
of weights, measures, weighing
measuring or instrument that are
licensed to be dealt with by the
party).

(2) The licence is valid for the party named above in respect of his premises located at

(3) This licence is valid from to

(4) The dealer shall comply with the conditions noted below. If he fails to comply with any one of these, his licence is liable to be cancelled.

Signatures,
Superintendent of Weights and Measures,
Himachal Pradesh, Administration.

Date

Place



CONDITIONS OF LICENCE

1. The person in whose favour this licence is issued shall—

- (a) comply with all the relevant provisions of the Act and Rules for the time being in force;
- (b) not encourage or countenance any infringement of the provisions of the Act, or the Rules for the time being in force and shall report without delay to the Inspector any infringement that may come to his notice;
- (c) keep this licence exhibited in some conspicuous part of the premises to which it relates;
- (d) comply with any general or special directions that may be given by the Superintendent of Weights and Measures of Himachal Pradesh Administration;
- (e) surrender the licence if and when required to do so by the Superintendent or any other officer employed under the Act.

2. Every condition prescribed after the issue of this licence shall, if notified in the Official Gazette, be binding on the person/persons to whom the licence has been granted.

Note.—In the case of firm, its name with the names of all its members should be given in paragraph 1.

SCHEDULE XII

(See Rule 27)

Licensing and renewal fees for manufacturers, repairers or dealers of weights, measures, weighing or measuring instruments

Manufacturers..	..	Rs. 25.00	per year
Repairers ..	..	Rs. 5.00	per year
Dealer ..	..	Rs. 10.00	per year

SCHEDULE XIII

(See Rule 27)

*Register of licensed manufacturers/repairers/dealers in weights/ measures/weighing instruments/measuring instruments***OFFICE OF THE SUPERINTENDENT OF WEIGHTS AND MEASURES
HIMACHAL PRADESH ADMINISTRATION**

Licence No.	Date of issue	Name, parentage & residential address of the manufacturer/repairer/dealer	Place where workshop is situated	Articles to be manufactured/ repaired/ sold	Trade Mark mono-gram being used	Orders regarding cancellation of licence	Result of appeal	Remarks
1	2	3	4	5	6	7	8	9

Note—1. In the case of a firm, its name with the names of all its members shall be given in column 3.

2. Column (6) does not apply to repairers and dealers.